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BETTER FRUIT

AN ILLUSTRATED MAGAZINE PUBLISHED MONTHLY IN THE INTEREST OF MODERN, PROGRESSIVE FRUIT GROWING AND MARKETING

Northwestern Boxed Apples and Salt Mackerel

By Dwight L. Woodruff, District Manager Apple Growers' Association, New York

A SICK business needs curing just as much as a sick man and a sick business is one in which a reasonable amount of success and permanent progress, commensurate with the effort expended is not being realized. The Northwest boxed-apple industry is the business in question and anyone fairly well informed knows that in comparison with other agricultural and horticultural enterprises, this business is not fulfilling its mission; neither is the grower reaping the reward he is justly entitled to reap. Let me ask you, hard-working, self-denying (oftimes heavily mortgaged) apple growers; you, the local merchant, who reads the signs of the times clearly; you, our long suffering and faithful banker, carrying the financial burden of your community, frequently without bankable security; let me ask you, why the commodity in question should be and is selling in this season of 1917-1918 at prices only slightly above former pre-war prices, when nearly all other food products are selling at 50 to 400 per cent advance.

As an illustration: California and Florida oranges are readily selling for from \$8 to \$10 per case, while Northwestern apples at the very best are only bringing from \$2 to \$3 per box. A box of apples weighs 50 pounds and a case of oranges 72 pounds, which only shows a difference in weight of about 45 per cent, while the selling price shows a difference of about 265 per cent in favor of oranges. Expert dieticians claim the food value of oranges and apples is practically the same. The objection will be advanced immediately that there is a very short crop of California and Florida oranges. This is all very true, but at the same time the difference in price is out of all proportion to the crop conditions. The increased prices received this year for Northwestern boxed apples does not begin to offset the increased cost of production. This is an obvious fact. Then why; what is wrong? You will admit there is either something being done that should not be or something being left undone that should be done. You will admit my statements are true thus far. Beyond question a remedy is needed. There is a solution for every problem, otherwise there would be no problem. That an effective remedy is at hand is my firm belief.

A little digression from the main subject and I will then briefly outline a few essential features of the remedy. The dullest business man or the least observant apple grower knows that what we need is a wider distribution of our apples. We all know a freer move-

ment is essential for our best interests. More retailers should be handling our product and selling at a fair profit. To accomplish this we must thoroughly educate the retailer's customers. A good illustration is here presented. One of the largest retail grocery houses in America, located in New York and having fifteen principal places of business, are now specializing and featuring Eastern-grown apples, simply to satisfy a whim—not on account of the superior quality of the apples, as I frequently see displayed in their windows apples such as we send to the cider mill. Another point, referring to a far more serious side of our problem, is: We frequently hear voiced something like this: "Yes, you Western fellows certainly do grow beautiful apples, and you put them up in a dandy package. We take our hats off to you, but your apples don't have the flavor that our apples do." These statements usually come from people of mature years, who are in fact recalling childhood days. They forget that when they were growing children any apple tasted good and satisfied better than our most delicious apple does now. In the past we have been all too willing to mentally agree with that statement, knowing full well it was not true.

Now to get back to the main subject. Human nature seems to be a peculiar quality. You find it everywhere, and it is just as pronounced in the Northwestern apple grower as in the Eastern apple buyer, and perhaps more so. We instinctively rebel when any new thing or movement is advocated. Many times this is a good standpoint, but more often it is not. The business world is being kept alive through new enterprises, new ideas, new viewpoints and new methods. Without them the whole commercial structure would stagnate and rapidly decline. A balance wheel between the unimportant and the essential is always necessary when advocating any untried features. Webster's dictionary tells us that to educate "is to impart knowledge" and that to advertise "is to give notice of information." When we mention advertising to the average man, he immediately shies and quickly sidesteps. It is a mysterious subject to him. It is something he knows, or thinks he knows, little about, but if we say "educate" to the same man, he immediately becomes interested because he knows that education, if rightly used, is beneficial in every walk of life. The point, then, to be brought out is, that we must thoroughly educate the consumers throughout the length and breadth of our whole land so that they will readily use more of our Western apples. The uninformed

will say immediately that "this is all foolishness. We have had apples since the world began. Everyone knows all about apples; everyone knows that we grow the finest apples that were ever produced and advertising cannot do us any good," but that this is false I know from experience.

The possibilities in the growing and selling of Northwestern apples have only very slightly been developed. We grow approximately 25,000 carloads of apples annually in the Northwest, and without giving this any serious consideration, it seems like an enormous quantity, but careful comparison shows that we are not producing any considerable portion of the apples grown in the United States. It is easier, oftimes, to deceive one's self than to deceive others, and that is just the thing that we have been doing for the past several years, and we are doing it much to the detriment of our own individual interests and the interests of our neighbor, no matter what apple section we may represent.

In the early days of the Northwest apple industry, the competition between the various districts tended to promote growth and wider distribution, but there came a time when this ceased to be a fact. Our tonnage became great enough so that one district was competing with another on an oftimes unfair basis, and while that district may have temporarily gained the lead, they have not been able to maintain it. The only competition that should rightfully exist between the various apple districts is that competition based upon the desire and purpose to produce and market an article superior to our neighbor. This competition, coupled with intelligent selling and distributing methods, and climaxed with a centralized, general advertising or educational campaign must and will bring to the grower greater success than has been possible under our methods.

Every apple district has at least one more or less successful co-operative organization, and for all of these I have only words of praise, which also applies to the independent shippers who have worked along constructive lines. Many efforts have been made and are still being made with a larger outlook to combine the marketing efforts of the different districts in one organization. Success along these lines has not been forthcoming, and, for the time at least, it may be advisable to drop further efforts of this character.

Admitting that the time has not arrived calling for centralized marketing as a whole, we will not admit and must not admit that it is not possible—yes,

and eminently practical that we combine, consolidate and centralize our advertising efforts. We want to advertise Northwestern apple, not simply Wenatchee, Hood River, Yakima or Idaho apples, but stick to the one-brand text, namely, "Northwestern Apples." If one district prospers, the other districts must in consequence, providing they are doing business legitimately and up to standard methods. California is a fair example of this method. Money has been spent freely to advertise California products until the magic word "California" whets our appetites and opens our purse strings in response to their educational work. This plan is going to meet with strenuous objections from some Western growers who do not understand Eastern conditions. The grower from the comparatively unknown district will feel that he will not participate in the benefits to be derived through advertising in proportion to his neighbor in the better-known district and the grower in the well and favorably-known district will feel that the grower in the comparatively unknown district will have the advantage over him, but that is just where they are both mistaken.

As an illustration, we will take New York City, which is admittedly the largest apple market in the world. The wholesale and retail buyers here know not only the districts that produce the most perfect apples of certain varieties, but they also know the shippers, regardless of whether they are individual or co-operative, and their methods as well. They go way beyond this and know the individual growers who are producing either a good product or a poor product, and you may rest assured that this co-operative advertising will tend more than any other factor to bring out and establish a survival of the fittest, which, being interpreted in a broad way, means that the individual or corporation that puts the greatest effort along intelligent constructive lines into his methods will unquestionably reap the most reward.

You may be surprised to know that the Florida citrus people, especially the Florida Citrus Exchange, have carried on this year expensive and constructive advertising campaign; this in view of their extremely short crop. The California people may not have advertised so extensively, but they have been living, so to speak, upon the great momentum generated through years of constructive advertising. Their selling methods have reached a point near perfection. In the large cities where auction privileges are to be had they sell practically all of their products through the auction, thereby obtaining the widest distribution possible, with each purchaser on an even basis. Their methods at carlot-points where auctions are not established is to sell at the prices prevailing on that day for the same size and grade of fruit sold at the nearest auction point. They never try to extract from the buyer the last nickel in the box. If there is one thing more than another that this great world war has brought out it is the necessity

Continued on page 25



Hood River Apple Box at Tan Che Ssz Temple

SOUTHERN OREGON EXPERIMENT STATION

F. C. REIMER, Superintendent.

A. C. McCORMICK, Assistant Horticulturist.

Talent, Oregon, March 30, 1918.

Mr. E. H. Shepard, Editor BETTER FRUIT, Hood River, Oregon.

I am sending you herewith a picture which I think will be of interest to your readers, especially your Hood River readers. During the past summer and fall I spent six months in the Orient making a special study of Oriental pears. This work took me into the wild and mountainous regions of various parts of the Orient. The favorite abode of the Buddhist and Taoist temples is in these mountains, and often in the most secluded and most inaccessible places. These temples were my favorite lodging places, not because there was anything favorite about them, but because they were often the only places of abode, and because they were usually better by one or two notches than the dreary and often unspeakably filthy Chinese inns.

One night was spent at the Hotel Tan Che Ssz temple in the mountains southwest of Peking. While rumaging around this place viewing with awe and subdued reverence the numerous gods, and the live snake which cures all human ills, I stumbled over one of the most unexpected and most amazing things of

my trip. As you will see, it is an apple box with one end cut off. When I beheld the inscription on the side I was so amazed that I fell over and worshiped the nearest idol. For an instant I thought that it was simply a vision. When I recovered my balance I carried the box out into the courtyard, placed it beside an enormous urn, made a Buddhist priest stand beside it, and then photographed it. When I asked the priests how this box got to the temple all of them shook their heads and blared "mayo," which means "I know not." Now, it was either carried there by some Chinese spirit or by someone who used it to carry supplies from Peking to Montikou, and then across the mountains to Tan Che Ssz.

At any rate this Oregon apple box in this secluded spot in the mountains of China, and in this land of mystery, and misery, seemed quite strange and even mysterious.

Very sincerely yours,

F. C. REIMER,

Southern Oregon Experiment Station, Talent, Oregon.

Do not help the Hun at meal time.

Honey and syrups instead of sugar will make victory just as sweet—and bring it much sooner.

Summer Pruning of a Young Bearing Apple Orchard

By L. D. Batchelor and W. E. Goodspeed, Riverside, California

THE majority of horticultural writers seem to favor the summer pruning of apple trees. The practice and the arguments made in its favor vary widely and in some instances seem almost contradictory. On the other hand, some experimenters and practical workers have obtained negative results by summer pruning from the viewpoint of crop production and tree growth. Dickens (Kansas State Bulletin 136, p. 181, 1906) caused unproductive ten-year-old apple trees in Kansas to bear satisfactorily during the fourth year of summer pruning. The Gardner's Chronicle (Gardner's Chronicle, 3, Ser. 41 (1907), No. 1069, pp. 400-403, 406, 407) compiled the opinions of more than one hundred and eighty-five fruit growers who practiced summer pruning, and about 82 per cent of these orchardists reported satisfactory results, while the remainder expressed doubts as to the value of the practice. Opinions compiled from English fruit growers by the Journal of Royal Horticultural Society (The Summer Pruning of Fruit Trees. Jour. Roy. Hort. Soc. 33, part 2, pp. 487-499, 1908) showed that the consensus of opinion was uncertain as to the effects of summer pruning and that much depended upon soil, climate, varieties and season of practice. Drinkard (Va. Sta. Tech. Bull. 5, p. 119, 1915) checked wood growth and greatly stimulated the formation of fruit buds by summer pruning but one year. Vincent (Pruning for Increased Color and Yield, Better Fruit, December, 1915, p. 27) found summer pruning to be profitable in Idaho, as it increased the total yield, size and color of the fruit; these trees were not irrigated, however.

The lack of unity on this subject only points out the many factors which must be considered in giving advice on this matter or in planning investigational work which is intended to throw light on this problem. Any treatise on summer pruning of apples must take into consideration many of the following factors, which will bear directly on the results obtained: Nature of both the summer and winter pruning practice, variety, stock, root development, age of trees, soil and climatic conditions. If the orchard is within the irrigated sections the amount and season of available water must also be considered. With these factors in mind the writers planned an investigation on this subject during the summer of 1911.

The soil conditions of the orchard were most favorable to apple production, namely, a well drained, deep, rich, sandy loam. The soil was of much the same consistency to a depth of six or eight feet with a water table about 58 feet from the surface. In the virgin state this soil was covered with a heavy growth of sage brush, which vouches for its natural fertility. Since being brought under cultivation it has been devoted to grain, alfalfa, orchard and the growth of sugar beets as a com-

panion crop to the trees. The soil is in a high state of fertility for the growth of fruit or general farm crops. The varieties include the Jonathan and Gano. The trees had been annually pruned during the dormant season and presented an excellent example of vase-shaped trees, a type common to the Intermountain States. The length of the growing season is sufficient for the production of the late-maturing apples, such as the Gano or Winesap. An abundance of irrigation water is available. It has usually been necessary to water the orchard four times during the latter part of the growing season, from July 1st to September 15th. Much more water could be used if necessary.

In outlining the work it was planned to compare plots pruned only in the dormant season, with similar plots pruned during the dormant season and at different intervals during the summer. Nine similar plots were laid off, and pruned as follows:

Plot 1, to be pruned in February or March, cutting out the cross limbs, crotches, opening up the center, and thinning out the bearing wood of the tree. No limbs to be headed back and no pruning to be done other than at the above season.

Plot 2, pruned as Plot 1, during February or March, and all the suckers to be removed from the center of the tree from time to time during the summer.

Plot 3, same as Plot 1, except the excessive growth in the top of the tree is to be cut back to lateral outside limbs in an endeavor to make the tree take a more spreading and less upright form.

Plot 4, pruned as No. 1, during February and March, and summer pruned in a similar manner to remove suckers and open up the dense growth of the tree during the third week in June.

Plot 5, pruned similarly to Plot 4, except summer pruning was done the first week in July.

Plot 6, same as Plot 4, except summer pruning was done the third week in July.

Plot 7, similar to Plot 4, except summer work was done the first week in August.

Plot 8, all pruning similar to Plot 4, except summer pruning was done the third week in August.

Plot 9, unpruned.

Thus five plots were pruned during the summer, one every two weeks interval from the third week in June until the third week in August.

The summer pruning was similar in every way to the nature of the winter pruning. Crossing and parallel limbs were removed, and the fruiting wood thinned out here and there where it seemed to be crowded. In removing water shoots from the center of the tree, the cut was always made close to main limbs and no stubs were ever left. (Pruning the water shoots to stubs has been persistently practiced by some of the orchardists of the locality, but always with negative results as far as

crop was concerned, according to all observations the writers have been able to make.) Measurement of the crop production of marketable fruit has been the chief means of determining the effect of the several types of pruning. General notes were also kept on the size and color of the fruit and vigor of the trees. There was sufficient crop of Gano apples to warrant thinning all the plots to a minimum distance of five inches during the years 1912 and 1914. The Jonathans were similarly thinned during the latter season only.

The crop productions for the Jonathan plots are shown by Table 1. The variation between Plots 1 and 2 was only slight, the average production per tree for the four years for the above plots being 667 and 645 pounds, respectively. Rubbing the water shoots off of Plot 2 had little or no influence on crop production. Water shoots, however, are so much more readily and cheaply removed during the growing season that it will usually pay to remove them at this time because of the saving in labor. Plot 3, which was pruned to cause the trees to spread as much as possible, averaged 88 pounds less fruit per tree during the four years than Plots 1 and 2, on which no heading back was practiced. The summer pruned Plots 4 to 8 averaged 191 pounds of fruit less per tree for the four years than Plots 1 and 2, which were pruned during the dormant period only. The summer-pruned plots also averaged 112 pounds of fruit less per tree than the unpruned plots for the four years. Plots 1 to 2, which were pruned in the ordinary manner during the dormant season only, averaged 79 pounds of fruit per tree more than the unpruned Plot 9. The variation among the total production of the summer pruned Plots 4 to 8 is within the realm of chance except for Plots 6 and 7, which were noticeably low. This was thought to be caused by the fact that these two plots, through causes of no interest here, were more severely pruned during the summer of 1913 than the other plots in question.

Turning now to Table II, which shows the crop production of the Gano plots, much the same comparisons and relative results can be seen. Plots 1 and 2 varied only as much as might be expected between any equal number of trees picked at random in the orchard. These two plots averaged 1,055 pounds per tree while Plot 3 averaged 965 pounds, or 90 pounds less per tree. This was due in part at least to the character of pruning which aimed to spread the trees of Plot 3 as much as possible by cutting back the long terminal growth in the tops of the trees, to the lateral branches. The same results were seen on the Jonathan plots. By the continued efforts of trying to make low-spreading trees, more of the future fruiting wood was removed, and there was a continual attempt on the part of the trees to resume their more

natural upright habit. The ratio of the total pounds of marketable fruit during four years was 100—88 in favor of the trees which were allowed to assume their natural shape. This only bears out the practical advice of earlier horticultural writers. On the subject H. Bailey writes as follows (The Pruning Book, p. 150): "The most rational pruning—when fruit and the welfare of the plant are chief concerns—is that which allows the plant to take its natural form, merely correcting its minor faults here and there." Gardner (Oregon Station Bulletin 130, p. 56, 1915) favors the thinning out rather than the heading in of apple branches for the purpose of increasing the formation of fruit spurs, under Oregon conditions.

The summer-pruned plots 5 to 8, inclusive, show only a small amount of variation well within the realm of chance. The average of these plots again fell below the Plots 1 and 2, which were similarly pruned in the dormant season only. The comparison is as follows: Average pounds of fruit per tree for four years on winter-pruned plots—1,055, summer-pruned plots—937 pounds, or a reduction of 112 pounds per tree. If the entire orchard had been summer pruned it would have caused an average production in yield during the past four years of 257 boxes per acre (this is based on 50 pounds of fruit per box; there are 115 trees per acre in the orchard under consideration), or an average of 64¼ boxes per year. With the Gano variety there was an increased yield on the unpruned Plot 9 of 101 pounds per tree compared with Plots 1 and 2, which were winter pruned. This is more than offset, however, as will be seen later by the difference in the quality of the fruit, and the added cost in thinning. It will be interesting to see whether the unpruned plot can continue its annual large crop production and outyield the pruned plots. Bedford (Woburn Exp. Farm Rpt. 7; 1907) and Piekering report that unpruned trees outyielded pruned trees nearly three to one at the end of twelve years' experimentation. The unpruned plot averaged 219 pounds per tree more for the four years than the summer-pruned trees. This is approximately a box per tree per year, or a yearly reduction of 115 boxes per acre, charged against his style of pruning.

It should be noted here that the orchard under experimentation is far from being an unproductive orchard. The winter-pruned plots produced very satisfactory commercial results. Summer pruning, therefore, was not undertaken in an attempt to cause barren trees to become fruitful, but rather to test the value of summer pruning in connection with winter pruning where trees were already producing crops at least equal to average of the region. The color of the fruit on the several plots has not varied materially, except the unpruned Plot 9 has gradually become slightly inferior concerning this factor. This was most noticeable on the lower limbs. During the season of 1914 the fruit on Plot 9 had only about

70 per cent as much color as the other plots. This more than offset the increase in yield of this plot as compared with the pruned trees. No difference whatever could be detected between the color of the fruit on the summer-pruned plots and those pruned only in the winter. All of these trees had a small percentage of sunburned fruit, but the crop as a whole was very evenly colored on all parts of the trees. The size of the fruit was largely equalized by thinning the several plots. It cost about 25 per cent less per tree to thin the pruned trees than the unpruned ones; the actual price being 20 cents and 15 cents, respectively. As a means

of thinning the fruit and improving the color by opening up the dense growth of the tree, the moderate winter pruning is advisable.

The above results may apply only to young; vigorous bearing apple trees of the Jonathan and Gano varieties when planted on a rich, sandy loam, free from seepage, in semi-arid climate, with an abundance of irrigation water available. These varieties under the above conditions show a tendency to overbear soon after reaching a productive age, and are usually thinned; summer pruning reduces the area of fruit-bearing wood, and the vitality and productivity of the tree.

TABLE I.
Showing Average Yield of Jonathan Trees Under Different Methods of Pruning.

Plot	Method of Pruning	Average Yield Per Tree				Total Average
		Yield 1911 lbs.	Yield 1912 lbs.	Yield 1913 lbs.	Yield 1914 lbs.	
1.	Winter pruned only*	50	208	82	327	667
2.	Winter pruned and all suckers removed from tree during summer	37	150	69	389	645
3.	Winter pruned with excessive growth in top of tree removed to outside lateral limbs	14	200	31	323	568
4.	Winter pruned, also summer pruned third week in June**	33	111	66	356	596
5.	Winter pruned, also summer pruned first week in July	41	111	50	281	513
6.	Winter pruned, also summer pruned third week in July	16	125	8	200	349
7.	Winter pruned, also summer pruned first week in August	16	116	32	204	368
8.	Winter pruned, also summer pruned third week in August	20	112	57	312	501
9.	Unpruned	35	141	59	342	577

* All winter pruning done during February or March.

** Summer pruning consists of removing suckers and opening up dense growth.

TABLE II.
Showing Average Yield of Gano Trees Under Different Methods of Pruning.

Plot	Method of Pruning	Average Yield Per Tree				Total Average
		Yield 1911 lbs.	Yield 1912 lbs.	Yield 1913 lbs.	Yield 1914 lbs.	
1.	Winter pruned only*	73	400	147	441	1061
2.	Winter pruned and all suckers removed from tree during summer	107	243	221	478	1049
3.	Winter pruned with excessive growth in top of tree removed to outside lateral limbs	78	243	147	497	965
4.	Winter pruned, also summer pruned third week in June**	106	193	179	478	956
5.	Winter pruned, also summer pruned first week in July	93	225	165	470	953
6.	Winter pruned, also summer pruned third week in July	100	131	224	420	875
7.	Winter pruned, also summer pruned first week in August	92	185	232	446	955
8.	Winter pruned, also summer pruned third week in August	81	175	251	438	948
9.	Unpruned	39	228	342	547	1156

* All winter pruning done during February or March.

** Summer pruning consists of removing suckers and opening up dense growth.

Grafting Tardy Walnut Trees

By Chas. L. McNary, Salem, Oregon

THE culture of walnut trees for their fruit in the adaptable portions of the Pacific Northwest has not reached the station where it may be said that all problems confronting the grower have been satisfactorily solved. This situation is mainly attributable to the recentness of the industry and to the indisputable fact that greater skill is required to produce superior walnuts than is necessary in the culture of most fruits. By the force of experiments and through observations covering a substantial period of time, we have clearly demonstrated the practicability of walnut growing in our Northwest country.

Many factors affecting the industry have been studied by enthusiastic investigators, but none more interesting than the attempt to change the behavior of a misbehaved tree by top working to a scion taken from a perfectly behaved tree. This article is therefore intended

to incite further investigation into this profitable field of labor, and to throw such light upon the darkness of this question as my limited experiments have taught.

An interested observer sojourning through the country in the month of June, will have his or her attention arrested by the number of walnut trees in seedling groves that have the appearance of lifelessness on account of their not having entered the period of foliage. This condition is frequently apparent in individual trees standing alone, yet is more noticeable in cluster planting. Upon a close examination of these belated trees, you will discover that they are not dead, but are sleeping, and if you will continue your observations, you will notice that about July 1st, these trees become aroused and then enter upon their short season of growth. Scarcely is it necessary to re-

mark that these trees make an unsatisfactory growth and are often crippled by late frosts that occur regularly each fall. These trees rarely make more than two-thirds of the growth made by trees that start at a normal time in this climate, which I shall place as about May 1st, and more rarely do their nuts mature early enough to avoid the frosty nights of the declining year.

On the farm which I own and operate jointly with Mr. W. T. Stolz, five miles north of Salem, Oregon, forty acres of land is planted to seedling walnut trees, mostly of the Franquette variety, ranging in age from four to seven years. In this planting, consisting of more than one thousand trees, about ten per cent were observed to be "sleepy," that is, not leafing until July the 1st of each year. The trees were undersized as compared with those having normal habits, and were otherwise deemed to be valueless as permanent trees. The question of their treatment or their extirpation became imperative and on account of their root and body development, it appeared that a treatment, if practicable, would bring quicker pecuniary returns than the removal of the trees. Consequently, on July 4, 1915, two of the trees were limb worked to Franquette scions that had been carried over in cold storage, involving six separate grafts. Three of these grafts survived and three perished; those that endured attained a growth of approximately five feet. The spring of 1916 witnessed a perfect revolution in the conduct of these trees. The season-old grafts commenced to grow about May 1st in response to the parent tree from whence they came, and continued to grow in the manner and along the custom prescribed by their more intelligent ancestors, until they were abruptly stopped by that killing frost in the early days of October.

Encouraged by the success of late grafting in the summer of 1915, I decided to operate upon the remaining sleepy trees this summer, so during the dormancy of the trees last winter I caused a number of scions to be taken from selected Franquette walnut trees and placed the cuttings in cold storage, where they remained incased in damp moss until June 18, when the work of limb and body grafting commenced. Ninety-two grafts, covering eighty-four trees, were placed upon these backward trees with result that forty-eight grafts grew until cut down by the frost of October. The percentage of those that lived was as 52 is to 100, and each experienced a luxuriant growth, in some instances as much as six feet. It will be remembered that during the 18th and 19th days of June, last, when the work was performed, the days were exceedingly hot, and for that reason, the methods employed will be outlined briefly. The scions were placed on the trees in the usual manner, and at the base of the graft was tied a double handful of damp moss wrapped in oiled paper, and over all was placed a six-ounce paper bag. The principle involved in the using of the moss was to maintain the

humidity in the atmosphere and to conserve all the freshness and coolness possible. To my satisfaction, I have demonstrated that the sleepy tree will conform its habits to the scion when once installed, so that it is both possible and practicable to make the body and root system of an undesirable tree perform the functions of one that answers the requirements of the most exacting culturist.

But, you ask, properly, is it necessary to wait until about the third week in June, or later still, July 1st, when the tree shows life and the flow of sap is abundant to insert the graft? Primarily, I supposed that the only time properly to graft was when the tree first experienced hearty circulation of sap, but latterly, I am convinced otherwise, and now believe that a tree should be grafted when the occasion is most propitious for the scion. That trees experience a rest period has been absolutely demonstrated by many thoughtful investigators and that a walnut scion having a different habit of life will control a tree showing a different and more backward disposition has been developed by my own experience,

which is infinitesimal as likened to many other growers of this popular nut.

While it is not my purpose to enter upon a physiological discussion of the many principles involved in an elaboration of this question, for the reason of my acknowledged unfitness for the task, yet I shall state my reasons for concluding that the time to top work a walnut tree must be governed by the readiness of the scion for action rather than that of the stump upon which the graft is placed. Students of horticulture have proven that by means of various treatments, the rest period of plants can be broken, causing them to begin growing within a short time following the application of the method invoked. One of the agencies that I have observed is a shock superinduced by a severe cutting of the tree, thus the cutting of a tree back to a stump produces such a shock to the tree as to stimulate it into a much earlier growth than it would have experienced by the omission of the treatment. In other words, the pomologist would say that this violence to the tree would stimulate the enzymes into activity. Further, the walnut tree is never really dormant



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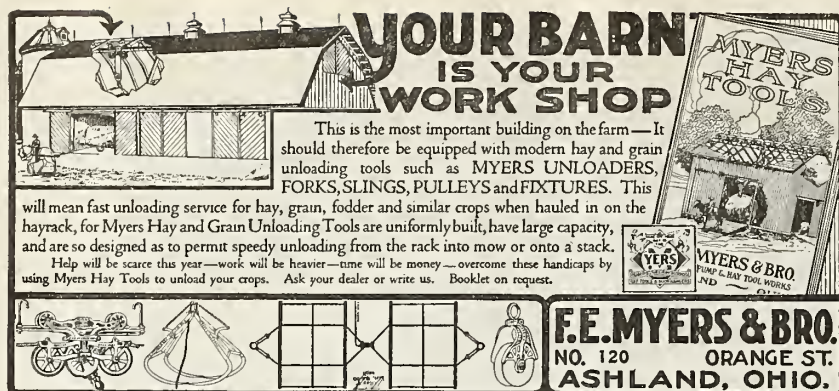
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insofar as the sap flow is concerned. Let him who is skeptical remove a limb in the dead of winter, and he will be at once convinced of this statement when he beholds the flow of sap that follows. And for that reason I conceive there is sufficient sap activity in these late-starting trees to supply the demands of a few scions whose needs are modest as compared with the total sap flow which lies in reserve for the tree's use during the active period of their development. Furthermore, it appears that the scion has well-known powers of "pumping" sap independently of the stump on which it is grafted, and that the stump and roots will respond to the draft created at the top of the scion. This must be so, for the scion has dormant life and is seeking every channel to develop its buds, and will, unless retained in almost frigid quarters, commence to bud at its natural time.

As a deduction from what has been said, I would recommend to the luckless orchardist who has trees of dilatory habits, to work them over at the precise time he would give his attention to normally behaved trees, say, about April the 15th, allowing a few days for the scion to callous before the period of growth, and then to place the unused grafts in cold storage and later on, or about the 15th of June, to employ them in instances where the scions did not grow. By accepting this formula, he will be in a position to take advantage of two opportunities for the same work and thereby appreciably reduce his failures, and when successful the period of time required by the transformation will give new significance to the declaration that nature works in a mysterious way her wonders to perform.

Commercial Prune in the Snake River Valley

By L. G. Dunn, Bliss, Idaho

MANY features of developing the commercial prune in the Snake River Valley will apply favorably to the Boise Valley or other parts of the state. As local conditions vary so much in the different parts of the Northwest, I will confine myself principally to our experience in developing more than 200 acres of Italian prunes on The Swiss Valley Ranch, eleven miles west of Bliss, Idaho. We are located in the Snake River canyon, between the rimrock and the river, where the river makes a three-mile curve around the ranch. Beginning at the east side, flowing southwest, then flowing to the right until it flows directly north, toward King Hill.

This land in the bend of the river is known as the Swiss Valley Ranch, about three-quarters mile wide. The ranch is divided onto two principal flats or levels. The lower flat, where we have about 100 acres of Italian prunes is about 60 to 80 feet above the river. On the upper flat we have more than another 100 acres Italian prunes; it is about 250 feet above the river. Then the rimrock on the east side of the ranch is about 100 feet higher, nearly all a perpendicular wall, which shades over a great portion of the orchard quite late in the morning, making a great protection during late spring frosts. The air drainage is generally

good. The soil is rather a coarse silty or lava ash sandy nature, rich in about all the soil elements that go to make ideal fruit land, except humus and nitrogen, which is found deficient in nearly all the new soils of the Northwest. This deficiency we are trying to supply by raising alfalfa, clover and other legumes between the trees. Sometimes plowing under a green cover crop.

The first planting of prunes began in the spring of 1913. The first stock of trees, 20,000, were all the best stock we could get, yearlings four to six feet. The inspector did not throw out a single tree from the 20,000. A few trees purchased were three to four feet, and it might be well to say along this line that, as these three to four-foot trees were about two-thirds the size of the four to six-foot trees, they are still maintaining that comparative standard; and from all appearances at this time they will still maintain that same comparative standard in the production of fruit. It never pays to plant anything but first-class stock. We have also noticed that the early-spring planting got the best results on the growth of the trees up to this time. Fall planting has not proved as successful as spring planting.

Clean cultivation and growing crops between the trees are showing about

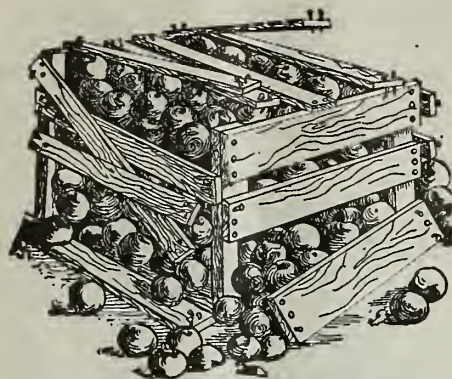
equal results, so far as the growth of the prune trees are concerned, up to this time. Where clover or alfalfa is grown right up under the young trees they require a great deal of water, and then do not do so well, though I think they will be benefited in the future by having had this cover crop there. On some parts of the orchard we have grown corn between the trees for three years in succession, on land that had clover between the trees the two first years. On this portion of the orchard are the very best trees. However, we would not advise planting corn three years in succession on any land.

On the other portion of the orchard we have been raising clover, alfalfa, potatoes, beans and carrots, etc. Other portions are clean cultivated, while certain other portions are so rocky that we do not try to do anything with it except to irrigate it. But that part is not doing so well. Thorough cultivation is getting the best results throughout the valley.

Pruning.—The first year when the prunes were first planted, we cut the switches back to about thirty inches. Second spring the trees were well cut back again, after that just enough pruning to keep the trees balanced. Owing to the strong prevailing winds from the west, most of the pruning is done on the east side. As a rule prune trees do not require much pruning, though a little pruning will always help.

Irrigation.—Our only rule is to irrigate any part of the orchard when it needs it and as much as it needs, regardless of when it was previously watered, or the number of irrigations it has already had in the season. A part of the orchard where there is alfalfa or clover growing all around the trees, we sometimes irrigate ten times during the season. Other portions, where clean cultivated, only two or three times. There are two one-acre patches of prune trees above the ditches that are now five years old that have never been irrigated. These trees are growing just about as well as those that have been irrigated regularly. We have practiced considerable late fall or winter irrigation with very good results. Especially if the fall and winter is rather dry and cold it is of very much benefit, and in our valley it never does any harm.

The oldest trees are now five years old, and over a greater portion of the fields we have developed a very fine young commercial prune orchard. Last spring, 1917, twelve or fifteen thousand of the oldest trees bloomed and set on a heavy crop of prunes, but, like most all the young prune trees of the Northwest, they nearly all fell off before they matured. The cause of this heavy shedding has been a mystery to the horticultural experts, as well as to the prune growers. On The Swiss Valley Ranch, it is our opinion the heavy shedding of the prunes was caused by the unfavorable climatic conditions the past three years, as follows: The winter of 1914 and 1915 were very dry, no snow, and quite cold, followed by a dry, hot summer, with a shortage of water for irrigation. Winter of 1915 and 1916 rather dry and cold in early part of the



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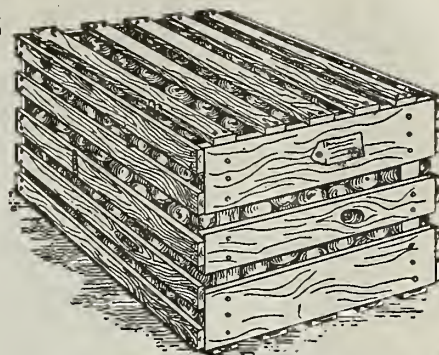
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winter, followed by heavy rain and snow in February, which fell on frozen ground and nearly all ran off. The trees bloomed and set on fruit normally in the spring. Then in May came the coldest late freeze on record. The temperatures were: May 10, 18 above; May 11, 21; May 12, 19; May 13, 23; May 14, 31; May 15, 24. This was quite a shock to the fruit trees. The average minimum daily temperature for May, 1916, was 33.8. Compare this with the average daily minimum temperature for December, 1917, which was 32. We have kept a strict daily record of the maximum and minimum daily temperature at the ranch the past five years, and find it quite interesting in making comparisons.

As you know, the winter of 1916 and 1917 was very cold and long; a late spring followed by extreme heat in July, with a very low degree relative humidity. All these climatic conditions seemed to have run down the vitality of the young prune trees until they were unable to mature their fruit. It being the nature of the Italian prune to shed what fruit it cannot well mature.

In marketing the prunes it is the intention, of course, to ship as much fresh fruit to Eastern markets as possible. While in the East last month, I made investigations in several large markets regarding the demand for the Italian prune and found them all wanting more Italian prunes, and the prices are good as compared with previous years. They

are getting to be a favorite fruit with all classes of people in countries where they cannot be raised. The farmers' wives throughout the Middle West are anxious every fall to get a few boxes of Italian prunes (big blue plums, as they generally call them) to can for home use. Taking everything into consideration, the future for the prune industry looks very bright. It is the intention of the Swiss Valley people to build drying plants, etc., to handle by-products and take care of all fruit that cannot be handled fresh, and so develop their 200 acres of Italian prune orchard that will make it one of the greatest commercial prune enterprises in the Northwest.

Benefits in Horticulture from Cross-Pollination

By O. B. Whipple, Bozeman, Montana

THE term cross-pollination in common usage means the transfer of pollen between flowers borne upon different plants. On the other hand, self-pollination refers to the transfer of pollen between parts of the same flower or between flowers of the same plant. In other words, self-pollination involves in its broadest sense the parts of one individual plant and cross-pollination the parts of two distinct individuals. As the terms are used in horticulture we must still broaden these definitions, for we still consider the flowers of those plants commonly propagated vegetatively (by cuttings, layers, suckers, and by graftage) self-pollinated so long as the transfer of pollen does not extend beyond individuals of the same variety. When the transfer extends beyond the variety, as between a Jonathan and a McIntosh apple tree, we say it is cross-pollination. But strictly speaking horticultural varieties which are propagated vegetatively are nothing more than individuals. All our varieties of fruit have either appeared as seedlings or bud variations. In each case they were single individuals to begin with and propagation by division of vegetative parts does not create new individuals. Two apple trees grown from buds or from stems taken from the same parent plant are no more unlike than two branches of one plant grown from seed.

The purpose of pollination is fertilization, without which flowers are rarely able to produce seed and never fertile seed. But, you may say, we care very little whether a pear produces seeds or not. True, unless we appreciate that most flowers require the stimulus of fertilization before they will develop fruits. Among our horticultural crops there are a few plants which are able to develop fruits without fertilization. The seedless oranges as well as other seedless citrus fruits and the English cucumber are familiar examples in which fertilization, either self or cross, is not necessary for fruit production, although it is necessary for the development of fertile seed. Occasionally our common tree fruits apparently set fruit without fertilization, but these fruits are in nearly every case inferior to those developed from fertilized flowers.

Darwin, an England writer, in a book published in 1859 first called our attention to the fact that in nature certain plants were so organized or their flowers so constructed as to invite, and, in many cases, to insure cross-pollination. Long before this it was commonly known that insects carried pollen from flower to flower and that cross-pollination was probably not uncommon in the plant kingdom, but until the writings of Darwin appeared it was not very definitely known that the plants profited

by the transfer. Darwin observed that among plants in nature there was a tremendous struggle for existence, in which many individuals perished, and he naturally concluded that those best fitted for this struggle survived. In other words, he contended that the various forms of plant life found in nature were forms evolved by this competition. If one plant had an advantage over a neighbor it survived and produced offspring which in many cases inherited the strong points of the parent. He found in nature many plants with blossoms so constructed as to practically insure cross-pollination and reasoned that where such a condition of affairs existed cross-fertilization must be beneficial. The theory advanced was that plants developed from seeds which were the result of cross-fertilization were more vigorous than those from seed of self-fertilized flowers, and consequently more often survived in the struggle for existence. These cross-fertilized seeds no doubt came in the majority of cases from plants where cross-pollination was induced by peculiar structure of flowers or by other means, and in time groups of individuals were developed in which cross-pollination was the rule rather than the exception. Darwin later verified the theory of greater vigor in seedlings resulting from cross-fertilization

Continued on page 19



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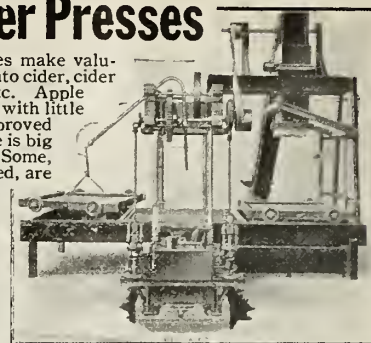
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Food Control or Famine

By Ernest B. Roberts, in The Montreal Star and The Toronto Globe

DO you remember when the British people first learned that this would be a long war? It was not by Earl Kitchener's famous statement that it would last three years; there was to us then something airy and ultra-professional about the prediction we could not understand. The people had not then learned to speak in soldier's terms. No, it was when Mr. Lloyd George, the "little Welshman," a common man, interpreted for them in common language the full significance of the bad dream they dreamt they were undergoing: "It takes eight months to make the machine on which to make machine guns," he said in July, 1915, after the war had already run its bloody course for eleven months. "We have had to build factories in which to make the machinery for making machine guns. Our high explosive shell requires tools for one hundred separate gauges for the nose alone." The British people gasped, but then, recovering with grand courage, buckled down grimly to meet the worst that the Kaiser's "Big Blond Beast" could give. That British people today, centered in the "little isle set in the silver sea," is down on the mat with that beast with their last nerve taut and tight, fighting a fight that, whether we recognize it in Canada or not, is going to settle for all time the destiny of Canada. For if,—if Britain fails? That is all that happened to France in 1760. But Canada changed hands through the failure.

What does Britain's effort mean to Canada? As little to nine out of ten of us as did Earl Kitchener's in 1914. We read, in a detached kind of way, as though it were of academic interest only, that the nation is now on rations. What is it that puts a whole free people of 40,000,000 on measured meals? Why cannot they have a "second helping" if they can pay for it? We do it in Canada; in fact some in Canada, thanks to British money paid over for shells, are doing it today where they never did it before. But why should the workman's wife in the Old Country have to dole out her old man's dinner as though she bedrugged it? Why should good, honest folks, not of the "charity type," have to wait hours and hours in

the queues, just as they do at your picture shows in Canada, for the bread which is to keep body and soul together? Why should women and children, bone of your bone and flesh of your flesh, as tenderly brought up as any in Canada, be given just eight little ounces of sugar in a week of seven long days? We ask these things in Canada, those of us who are trying to understand, but we ask with the same sort of bewilderment as we felt in 1914 when told we could not get to Berlin in 1915. Because it takes, to paraphrase Lloyd George's words, much more than eight months to make the machinery which shall feed a nation at war.

That is the present stage of food control. We are still making the bricks of which the factory of food control proper shall be built before we can make the machinery by which food control shall be accomplished. "I fear," said Lloyd George on another memorable occasion, and again we lacked the comprehension to grasp what he spoke of, "I fear the disciplined people behind the Germany army, the rationed family and the determination of wife, and sister, and daughter, and mother to stand and starve so that their fighting men may be fed—I fear it more than the Imperial Army itself." Only with a disciplined people behind can we hope to win that for which our souls are crying out. That is why the British people with a tremendous consecration that reaches to the tender children, have set themselves to a task from which they will only rise victors or vanquished. The rationed nation, the rationed family, the rationed child, blood of your blood and bone of your bone of a common British stock, that is the price they are proud to pay. For in this there is a mighty pride, a conscious measuring of their glory with the best traditions of ancient Sparta and of Imperial Rome, for they know that "it is a far, far better thing that they do than they have ever done." It shall ring and echo forever along the brightest hilltops of human history. The Canadian people have not yet had time to understand that the Food Controller's is the only war-time organization which had no workshop, no work-

ers, no anything to guide before the war. The militia department at least had a nucleus round which recruiting accretions could be grouped.

Food control until a year ago was a new science, unlearned so far as the Anglo-Saxon races were concerned, needless as the Prussian goosestep. There was no precedent for anything that had to be done; the Food Controllers in England, the United States and in Canada had to blaze their own trails. Conditions in the United States and in Canada were approximately alike, and the result has been that there is now close co-operation between Ottawa and Washington. It took eight months to make the machine to make machine guns, though they knew how to cast and build those machines from the first. Yet our overfed can only ask in slippers, armchair comfort, "What is the Food Controller doing?"

An outstanding change has taken place in the expert attitude toward food control in the last few months. In fact it is almost a matter of the last few weeks. Food control does not now chiefly mean a regulation of prices for us at home. What Food Controllers are faced with is the shortage of the food to control. It is famine rather than prices. This fact is the more startling the more one knows it. Rhondda, Hoover and the Food Controller of Canada, crossing the threshold almost simultaneously of a new domain, have suddenly come across the hideous shadow of a spectre of world famine darkening every path. What does it mean? Unless the people of North America do their utmost to conserve and to produce food, it means one of two ugly alternatives: Defeat or destitution in France, Italy and England—in homes on whose supplies of food the destiny of Canada depends as inevitably as though our nine provinces were with the departments of Northern France and Northeast Italy actually under the fell heel of Prussianism.

The food of the civil population of France has been so close to exhaustion that it was dependent on British shipping for its maintenance; and this shipping is so depleted by the submarine campaign that not a ship could be spared to carry the huge supplies that Italy had bought and paid for in Argen-

tina, but which, while the Italian people have in some cases escaped starvation so narrowly that even reduced France had to send them shipments just before Christmas, must remain there. Yet we in Canada have our "second helpings," and some people write to the Food Controller with sardonic humor to ask if "food control is not a joke." So little have we learned in forty months of warfare that we have not yet comprehended that Italy is fighting in effect as much for Canada as are our own Canadian soldiers just north on the same line. Had Canadians been in the tight place that the Italian civilians are now they would long since have cried out for a fairer bearing of the weight. Can one wonder that Italy, in dire distress, is looking for more loyal help from an allied Dominion?

This is not charity, this thing, food control. It is war. The Allies have a right to demand it. They have a right to resent the offer of only what is "left over." Those who are fighting a common battle for civilization and common



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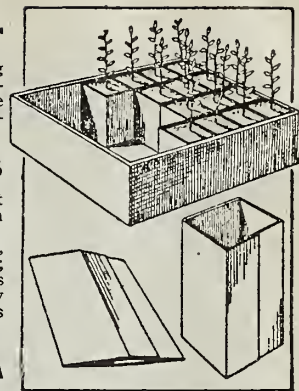
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protection have a higher claim than Lazarus had to only the "crumbs that fell from the rich man's table." The Canadian people must get the right ethics of war-time food control.

Remember, we have had the warning: "I fear the disciplined people behind the Germany army, the rationed family, * * * more than the Imperial army itself."

Small Fruits

By W. H. Paulhamus, Pres. Puyallup and Sumner Fruit Growers' Canning Co., Puyallup, Wash.

THE present demand for jellies, jams and preserves has given a new stimulus to the growing of bush fruits, consisting of blackberries, red raspberries, black raspberries, gooseberries, red and black currants, loganberries, phenomenal berries, and in fact every other kind of berries that do so well in our North Pacific Coast climate.

A few years ago red raspberries were a drug on the market at four to five cents per pound; today the canner is paying the grower eight cents per pound for the same product and is unable to secure a sufficient quantity to take care of his requirements. The old evergreen blackberry that has been so much of a pest to the average farmer has certainly come into its own, with a result that every canner is anxious to secure all of the evergreen blackberries that are obtainable and is willing to pay a price ranging from five to five and one-half cents per pound. In fact, every cross-roads merchant can create a market for these blackberries by arranging to put them in barrels for some responsible canner and ship them daily to a cold-storage plant. In other words, the present prices of all bush fruits should stimulate very materially an increased production.

The question that naturally arises in the mind of the man who has a few surplus acres of land is the advisability of planting; what variety to plant; how they should be planted, and the best method of handling after the planting is completed.

In red raspberries the desirable variety is the Cuthbert, for the reason that it can be used in jam making or in canning in syrups. There is no other red raspberry grown that has sufficient texture to withstand the necessary processing required in putting up in cans. Of course, in jam making it doesn't

make any difference how much the berry is crushed up the jam is equally good, but this is not true in canning and is equally not true in whole-fruit preserves in glass.

In the black raspberry the Munger variety appears to do the best in the canneries of the Pacific Northwest, therefore the grower should produce the black raspberry that the canner desires to purchase.

In the loganberries, it doesn't make any difference to the manufacturer of loganberry juice whether it is the loganberry or the phenomenal berry, but from a canning standpoint the larger the berry the more satisfied the consumer. Inasmuch as the phenomenal berry is very much larger than the loganberry and of equally good quality, it would be advisable to set out a portion of the new plantings of phenomenal and a portion of loganberries; in fact, the variety to plant depends entirely upon the adaptability of the berry to the particular soil that you are using. The phenomenal berry is a little more tender in some places than in others, but it is not advisable to undertake to plant too great an acreage of phenomenals without having some experience as to the adaptability of this berry to your particular community.

In strawberries, of course we all appreciate that there is no strawberry equal to the Clark Seedling either for fresh consumption or for canning purposes; but the Clark Seedling is generally considered a shy bearer, therefore if you could produce a crop of one hundred per cent more berries of some other variety the chances are that the crop producing the big yield will be the greatest price getter for you. Next to the Clark Seedling, from a canning standpoint, is the Wilson, which is an

excellent canner and a very fine berry for every purpose. In the Puget Sound country the Marshall comes third, as it is a good cropper and an excellent canner berry. The Magoon berry appears to grow the greatest yield per acre, but if berries are plentiful it would be impossible for the grower to sell any Magoons to a canner just as long as he is able to procure any other variety for his requirements.

Gooseberries are becoming a great factor in the manufacture of jam. The old-fashioned Oregon Champion appears to be the most desirable that can be grown. Gooseberries should be planted not closer than five feet apart and should be sprayed very thoroughly at least twice every year so as to produce the best results.

Victoria red currants are good, heavy croppers. The berry is of good size, good texture, and of excellent quality. The black currant is very desirable for jam-making purposes and can be marketed at a very satisfactory price.

Damson plums are in great demand for jam-making purposes, as are also Quinces. Quinces and Damson plums do about as well in this part of the world as any other tree fruit that is available, but they are hard to secure for the reason that there are so few places that they can be used to advantage, but the increased demand for jam makes them a very desirable product.

The apple grower needs a reasonable amount of bush fruits on his farm so as to give him early money. The gooseberry is the first berry to ripen, then comes the strawberry, red raspberry, loganberry, currants, and finally the blackberry. All of these crops are matured and out of the way before the apple crop is ready to harvest, and there is no grower who should not enter into all of these lines to a reasonable extent.

"It Is the War"

In France fifty per cent of the total energy of the people is said to go into military effort. Hardships, hunger, sorrow—all suffering is excused with the explanation, "It is the war." This is the kind of spirit needed in every American home.

War is an ugly thing, but a German peace is uglier—Russian farmers are producing German food.

BETTER FRUIT

PORTLAND, OREGON

Official Organ of The Northwest Fruit Growers' Association
A Monthly Illustrated Magazine Published in the
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All Communications Should Be Addressed and Remittances
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ADVERTISING RATES ON APPLICATION

Entered as second-class matter April 22, 1918, at the

Postoffice at Portland, Oregon, under Act

of Congress of March 3, 1879.

Advertising the Apple.—In this issue we present to our readers a very interesting article, "Northwestern Box Apples and Salt Mackerel," by Dwight L. Woodruff, district manager of the Apple Growers' Association of Hood River in New York. During the past few months Mr. Woodruff has been afforded some excellent opportunities for studying market conditions. The subject of advertising is one that is little understood by many fruit growers. In California the growers of citrus fruits and the raisin growers are fully appreciative of what advertising has done. Take up any of the national publications and you will see full page advertisements of raisins, and during the past few years the raisin industry has been put on a stabilized basis and is bringing the growers splendid net returns. Some years ago the loganberry growers were unable to market their crop. With a small fund of not more than \$1,000, which they spent in advertising, they succeeded in moving the crop, and the demand for loganberries, canned, dried, and loganberry juice, has become so great and such splendid prices realized, that the loganberry industry is fast becoming a very important one in the Northwest. A few years ago the walnut growers of California were receiving poor profits—the growers were low-spirited; their groves were neglected, and the result was small, scrubby, unattractive looking nuts. The California Walnut Growers' Association determined to emulate the methods of the California Fruit Growers' Exchange, which handles citrus fruits. A big advertising campaign was carried on, with the result that today the California nuts are bringing very high prices—the industry is stimulated, and the walnut industry is bringing to the growers big returns.

Elbert Hubbard once wrote a definition of advertising: "Advertising is the education of the public as to who you

are, where you are, and what you have to offer in the way of skill, talent or commodity. The only man who should not advertise is the man who has nothing to offer the world in the way of commodity or service."

A couple of years ago a meeting was held in Spokane during one of the National Apple Shows, consisting of representatives from Oregon, Washington, Idaho and Montana, to discuss the advisability of a general advertising campaign to advertise Northwestern box apples. This idea did not meet with the approval of all of the apple districts of the Northwest, but many of the districts have carried on splendid individual advertising campaigns. The Northwestern Fruit Exchange has spent large sums in advertising the Skookum Brand. The "Y" Brand, which is put out by the Yakima Fruit District Association, is well known throughout the Eastern states, through a good advertising campaign. In 1916 Hood River increased its advertising fund, which met with splendid success.

Advertising is necessary to increase the demand for any food commodity. It has proved to be successful for Northwestern apples, so that every fruit grower should be willing to spend a certain sum per box to create a greater consumption, which means better prices. Mr. Woodruff urges advertising not simply as Wenatchee, Yakima or Hood River, but advertising them as "Northwestern Apples," and he cites California as an example. It is through advertising that the by-product business of the Northwest is doing so much for the fruit industry—that they have been able to make more money out of the discarded fruit than is realized for the first-class product. It is certainly time that the fruit growers realized the value of advertising to create a wider demand, which means better prices.

Saving the Wheat.—In each issue of BETTER FRUIT we aim to publish cooking recipes that will assist our readers to prepare palatable dishes so as to save the flour, sugar and meat. The wheat shortage is becoming more serious, and so great is the European demand for flour that the Food Administration is urging farmers not to hold wheat of their last harvest for the seedling of their next crop, except in a few states where this is absolutely necessary—where the period of harvesting winter wheat overlaps the period of planting. It has long been a practice to hold over wheat for seed, but with the exception of a few sections this is not necessary. There has never been such an urgent need for wheat, and every bushel that can be put into action within the next few months will play an important part in the war. Each bushel of wheat, at the present rate of consumption, would provide bread for at least one of our Allied soldiers until the next crop is harvested. There is every indication of a bumper crop—the largest ever grown, if weather conditions continue favorable. The object of the Government was to produce a billion bushels, and with the outlook at the present time it is very probable this

mark will be reached. Throughout the country millions of people are reducing their consumption of wheat flour to the barest minimum—some households have used no wheat flour for months. The sacrifice is very little when we think of what the soldiers are doing and the tremendous sacrifices the people of Europe have been called on to make, and we urge that every reader of BETTER FRUIT will reduce the consumption of flour to the barest minimum, or do without it entirely, so as to relieve the suffering of our Allies in Europe.

It is about seven years ago that the first apple grading machine was first introduced in the Northwest. Since that time many new makes have been manufactured, some firms have discontinued, but each in their time have given pretty good satisfaction, but new improvements are continually being added. The grading machines that are being placed on the market now are giving excellent satisfaction, many claiming that their machine will grade every variety of fruit without bruising. Growers have found by actual experience that by using grading machines in the packing house it means a saving of from six to ten cents per box, and in addition the fruit is graded more uniformly to size. By the old style method, when the fruit was graded by the box, the worker tried to do as many boxes per day as possible, and in many instances the work was not done properly, and the packer who is packing by the box will not take the time to sort out the apples that are not up to grade, and the result was very often a poor pack. This year it will be necessary for growers to equip their packing house with every possible labor-saving device, and any grower who has once used a grading machine would not be without it if it cost twice the sum. This year much of the work of harvesting will be done by women and girls. In many districts the schools are suspended for one or two weeks to enable the growers to harvest their crops without loss. We would strongly urge every grower who has not already a good fruit grading machine to lose no time in sending for catalog or price lists, and to purchase early in the season the machine that seems best suited to his requirements.

Mr. Benjamin Wallace Douglass, Trevelac, Indiana, has recently published, through the Federal Publishing Company of Indianapolis, a most interesting and valuable book, "Orchard and Garden." For many years Mr. Douglass has been preaching the doctrine of better fruit and better gardens, and it is with the hope that in publishing this book it will prove a safe guide to the beginner. The last few chapters are devoted to flowers and shrubbery.

The first box of California cherries was auctioned May 1st, by the American Central Fruit Auction Company of St. Louis, for the benefit of the Red Cross. Bidding was brisk—the box changing hands several times, and more than \$1,000 was realized.

INCREASED PROFIT Less Labor

The Packer who
uses the Bushel
Shipping Basket



Shipping Peaches in Bushel Baskets at Koshkonong, Missouri

The Universal Package

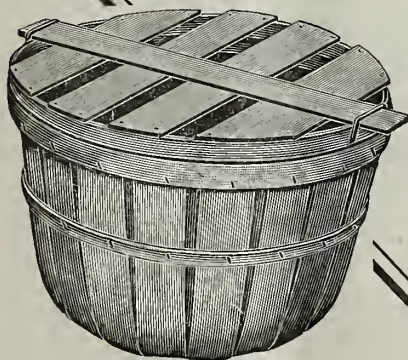
MAKES LARGER NET PROFITS

It is much better to get a good price for fruit packed with a small expense than to get the highest price and then spend all your profit in packing.

Send for Prices that will save you money.

Package Sales Corporation

106 East Jefferson St., South Bend, Indiana



A big cannery and evaporating plant is to be erected at Wenatchee, to be run under the very able management of Mr. W. H. Paulhamus, manager for the Puyallup and Sumner Fruit Growers' Canning Company, Sumner. School children are being urged to put in gardens as a means of assisting to get the cannery started, and which will mean a good many extra pennies for the children to invest in War Savings Stamps. Splendid prices are offered for all varieties of small fruits, beans and vegetables, but the main product to be turned out will be apples, such as evaporated apples, canned apples, jelly, and apple butter, for which there is a big demand.

Wilmer Sieg, formerly salesmanager for the Apple Growers' Association of Hood River, and for the past year salesmanager for the Earl Fruit Company in Spokane, has accepted the position of salesmanager for the California Fruit Distributors. C. E. Virden, general manager of the California Fruit Distributors, has gone to Washington in an effort to improve traffic facilities, so that the coming crop, which promises to be very large, may be handled successfully. Mr. Sieg will take Mr. Virden's place during his absence.

We have just received from the Kentucky Tobacco Company an "Illustrated Spray Chart for Sucking Insects," which is not only very handsome, but very valuable for every fruit grower. The drawings and the colors were done by Mr. B. B. Fulton of the New York Agricultural Experiment Station, who is not only a very able entomologist, but an artist of high ability. The spraying directions were prepared by the Kentucky Tobacco Company and submitted to Professor H. E. Hodgkiss of the New York Agricultural Experiment Station for his approval.

The illustration showing the box of Hood River apples is evidence that Northwestern apples are enjoyed in remote parts of the world.

May Restrict Importation of Nursery Stock.

The Secretary of Agriculture has called a public hearing, to be held in Washington May 28, at which will be considered the advisability of restricting the importation of nursery stock and other plants and seeds from all foreign countries. The meeting will be held at 10 a.m. May 28, in room 11, Federal Horticultural Board, Department of

Agriculture. Any person interested in the proposed restrictions may be heard either in person or by attorney. The restrictions are contemplated in order to prevent the introduction into the United States of any tree, plant or fruit diseases or of any injurious insects new to or not heretofore prevalent in this country. It is feared that certain injurious plant diseases and insect pests may gain entrance through the agency of ornamental and other plants imported with earth about their roots. There is also said to be special danger from plants imported from little-known countries, because lack of information as to the insect pests or plant diseases of such countries makes it impossible safely to pass such plants by inspection or to safeguard them by disinfection. Many of the most important injurious insects and plant diseases have been introduced in this country through such importations. On the other hand, there is a long list of similarly destructive insects and diseases which have not yet gained entrance.

Food control in North America today means chiefly getting the food across the Atlantic at all costs.

"Hep! Hep!" Ten miles more to hike—then camp and the comforts of a little chew of Real Gravely.



See That He Never Lacks a pouch of Real GRAVELY Chewing Plug

Your fighting man will go to almost any lengths to get good tobacco. Many a man has paid \$5 for less good tobacco than you will send him in a pouch of Real Gravely Chewing Plug. Only costs you 10 cents.

Give any man a chew of Real Gravely Plug, and he will tell you *that's* the kind to send. Send the best!

Ordinary plug is false economy. It cost less per week to chew Real Gravely, because a small chew of it lasts a long while.

If you smoke a pipe, slice Gravely with your knife and add a little to your smoking tobacco. It will give flavor—improve your smoke.

SEND YOUR FRIEND IN THE U. S. SERVICE A POUCH OF GRAVELY

Dealers all around here carry it in 10c. pouches. A 3c. stamp will put it into his hands in any Training Camp or Seaport of the U. S. A. Even "over there" a 3c stamp will take it to him. Your dealer will supply envelope and give you official directions how to address it.

P. B. GRAVELY TOBACCO CO., Danville, Va.

*The Patent Pouch keeps it Fresh and Clean and Good
—It is not Real Gravely without this Protection Seal*

Established 1831



Live Stock and the Orchard

By Prof. L. J. Iddings, University of Idaho, Moscow

THERE has been in Western agricultural practice a strong tendency for several years toward specialization. In so far as this has meant for more intensive methods and for greater intelligence and skill devoted to the production of special crops or special farm products, the movement has been worthy of high commendation. Weaknesses have been found in the system, however, and the trend of today is away from extreme specialization and toward diversification in the handling of the Western agricultural farm holdings.

A fundamental difficulty for the man of limited means in any plan of high specialization is that he does not, and probably cannot afford to prepare himself for a season of loss. It is not always entirely well with a specialty. Whether it is with the cereals or the forage crops of the field or the crops of the orchard, there comes a season when conditions are unfavorable and the income is small. With the fruit grower, furthermore, there may be the problem of the orchard not yet in bearing and diversification offers at least part solution for the problem of maintaining the family until the orchard is of bearing age. Diversification, therefore, does not run counter to the best interests of the fruit grower, but on the other hand, assists in increasing his income and in staving over certain periods when the orchard is young or when, for some reason, it does not yield in abundance. A modern slogan that is now quite popular in the agricultural field is the warning not to put all the eggs in one basket.

There are four direct reasons why the orchardist should be able to find a use for live stock in connection with his main business, which is that of fruit production. In the first place the live stock furnishes an additional source of income and often contributes directly to the support of the family by furnishing animal products for home consumption. Second, live stock may be made to furnish a market for many of the crops grown by the orchardist between the rows of trees. Some of the crops, such as legumes, corn, grains of various kinds, can, as a rule, be most profitably marketed through live stock. Third, the orchardist needs live stock for the purpose of maintaining soil fertility. We find that more and more fruit men are giving consideration to the question of fertilization and we all recognize that one of the cheapest and most efficient means of maintaining the soil in the best possible physical condition for maximum production is through the use of farm manures secured through live-stock keeping. There is a fourth reason why the orchardist should at this particular time think seriously of live-stock production. This is because the leaders of the American government today are calling for more animals and more animal products. The larger share by far of the needs of the nation in this direction will, of course, be taken care of on the ranges and on the farms. The fruit grower, however, can aid materially in this direction, and if a few head of live stock were kept on the average fruit farm of the West the sum total would be of real assistance in meeting the present-day needs of America.

Granted that live-stock keeping is feasible, we may immediately consider the kinds of live stock that are best adapted to the fruit farm. A few horses will always be kept, but many orchardists question the advisability of trying to breed horses in connection with an orchard plant. Beef cattle are produced most successfully and profitably where there is ample room and cheap grass. In a similar way sheep have, in past years, been regarded as better adapted to cheaper lands that are devoted largely to grazing purposes. In the past two or three years, however, hundreds of small flocks of sheep have been bought by the farmer and it will only be a short time, if the present tendency prevails, when sheep on the Western farms will be as common as they have for years been on the farms of Ohio and Indiana. There is a possibility of using a small band of sheep in connection with the orchard. For the average man engaged in fruit growing, however, the dairy cow and the brood sow lend themselves better to his needs. These two classes of animals fit well together on the farm and make a splendid combination for use in connection with the orchard.

Those who are keeping in touch with dairy conditions of today feel that the time is not far distant when dairymen are to be paid well for their work in producing milk and butter fat. Prices have not been adequate and the dairyman has been losing money for many months. The result has been the selling of a large number of dairy cattle and we will unquestionably soon be face to face with a condition in regard to milk and butter-fat production that will mean one of two things—the dairyman will be well paid or the consumer will do without dairy products. I am

familiar with one of the well-known irrigated districts of the West where many of the farmers have made a specialty of dairying. Two of the very best herds of that tract that have been tested and have a wide reputation for high production are now offered for sale. When the best of dairymen are thinking of quitting the business it is well for us to think seriously of the future. It is my opinion, confirmed by many experienced men with whom I have talked, that now is a mighty good time to get into the dairy business. Good cattle are being sold in many sections at quite reasonable prices and, as before indicated, there can be no other outcome than such prices for dairy products of all kinds as will enable the dairyman to meet all costs of keeping the herd and have a reasonable profit for his efforts.

In the orchard may be produced corn, peas and oats, and other crops for silage. The production of legume hays such as clover and alfalfa fit in well with the fertilization of the orchard and give the orchard dairymen the very best roughages for milk production. If the silo is not advisable, root crops can be grown between the tree rows to wonderful advantage. Grains may be purchased or may be grown in connection with the orchard. The combination of legume hay for roughage, of either silage or root crop for succulence, and of our Western-grown grains for concentrates, gives exactly the right kind of ration for heavy milk and butter-fat production. The grains that are needed are barley and oats, in addition to bran, which is now one of the relatively cheapest feeds that can be bought in the market.

The dairy cow, therefore, fits in with the orchard plan for between-the-row crops and not only furnishes the family with highly-nutritious foodstuffs, but in addition gives the fruit grower a week by week or month by month cash income to supplement the income from fruit production.

Swine fit in well with dairy cattle because one of the best of all feeds for growing pigs is the skimmed milk, which on many farms is a by-product of the dairy business. Fundamentals in successful swine production are pasture for the brood sow and pigs; by-products such as from the dairy for supplementing other rations and for keeping down cost of production, and concentrates for finishing swine for market. All of these feeds, to a limited extent at least, can be produced in connection with the fruit farm. The pasture could be legume pasture, either alfalfa or clover. In addition special between-the-row crops such as peas and oats, rape, kale and other crops of a similar nature can be seeded for hog pasture. Skimmed milk, unsalable fruit and wastes from the household may be used in connection with swine feeding. In addition there will be needed concentrates for fleshing swine for market. At present prices of feedstuffs, shorts and barley are probably the most eco-

nomical feed to use in swine feeding. A nitrogenous supplement should be fed in addition and tankage, skimmed milk, or alfalfa hay are feeds valuable in this connection.

There are a large number of questions of breeding, feeding and management that should be considered in connection with dairy cattle and swine for the orchard. Time, however, does not permit extensive treatment of these problems unless there is some particular point that needs amplification. It is not only true that dairy cattle and swine are best fitted of the farm animals for use in connection with the orchard, but in addition it is peculiarly appropriate that these animals be bred at this particular time, since of all the animals of the farm the dairy cow is most efficient in that she provides more human food from one hundred pounds of feed, through her milk, than can be obtained through the means of any other animal product. Swine rank second in efficiency to the dairy cow.

There is one other branch of the livestock industry that should be mentioned at this time, one of the great industries of the American farmer. I refer to poultry raising. Poultry should not only be part of the general plan on

the fruit farm, but in addition should be kept on every American farm. It is rather unfortunate that we find grain farmers as well as fruit growers going to the butcher or the groceryman for poultry that ought to be produced at home. Poultry on the fruit farm will not only furnish the family with foodstuffs among the most nutritious of all that are available for human consumption, but in addition, if properly handled, can be made to yield during the year no inconsiderable income.

The great fruit industry of the Northwest will lose nothing of its importance as a highly-organized specialty, but on the other hand will be strengthened and rendered more stable and permanent by the adoption of diversification to the extent of live-stock keeping along the lines suggested above.

In England, "His Majesty the King" and the humblest subject have duplicate ration cards.

Pick up the plow where it stands in the furrow—patriotism is the practical doing of the next job.

Bread is the staff of life, but very few Americans need a staff.

Mr. Fruit Grower:

The 1918 apple crop will, in all probability, be the largest yet recorded. Also, there is certain to be the greatest scarcity of labor yet experienced, especially of experienced packers and sorters.

With a **CUTLER FRUIT GRADER** you can teach inexperienced help to pack and sort and handle your crop quickly and at the least cost.

We are giving discounts for early orders and shipments.

WRITE NOW for circular and prices.

CUTLER MANUFACTURING CO.

New Address: 351 East Tenth Street, Portland, Oregon

WAR SAVINGS STAMPS DELIVERED TO YOUR HOME

Tear Out—Fill In—Hand Letter—Carrier—or Mail to Post Office

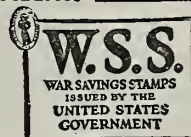
TO THE LOCAL POSTMASTER:—Kindly have letter-carrier deliver to me on _____ (Date) for which I will pay on delivery:

_____ \$5. U. S. WAR-SAVINGS STAMPS at \$_____ each
(State number wanted) (See prices below)

_____ 25c. U. S. THRIFT STAMPS at 25c. each.
(State number wanted)

Name _____

Address _____



W. S. S. COST DURING 1918					
April	\$4.15	July	\$4.18	Oct.	\$4.21
May	4.16	Aug.	4.19	Nov.	4.22
June	4.17	Sept.	4.20	Dec.	4.23
W. S. S. WORTH \$5.00 JANUARY 1, 1923					

Sugar Rations and Jam

This season of the year suggests summer fruits, canning, preserving and the sugar supply. Three pounds per person per month, the voluntary ration, permits little margin for preserving, and careful householders are asking, "Will there be more?" The United States Food Administration answers that it is endeavoring to supplement this allotment and provide ample sugar for the home-canning season. Provident housekeepers, however, can co-operate with this plan by saving from their present supplies for the time when they begin to put up summer fruits for winter use. On account of the shortage of ships the January and February sugar receipts in this country were far below those of the corresponding months of last year. Our sugar supplies are further limited by the fact that America and the Allies draw on the same source for sugar, and that source is principally Cuba. So even with an improvement in shipping facilities housekeepers cannot get the pre-war supply of sugar.

America's problem is simple compared with that of England, whose people are almost to the point of counting the grains. Such is the shortage of food there that householders must see to it that every ounce of sugar counts and every piece of fruit is saved. Last January the British Food Controller advised saving as much sugar as possible for jam making out of the meager individual ration of eight ounces a week. The women were assured that such savings would not constitute hoarding. People with orchards and fruit gardens had been asking whether they would receive extra sugar for preserving. At first the chairman of the Royal Commission on the Sugar Supply took the position that it was not considered fair to the town population that extra sugar for jam for home consumption should be allotted to people living in the country just because they were fortunate enough to have the fruit (*London Times*, January 16). In February, however, he sent out more encouraging news, and in the parliamentary debate of March 21, Lord Rhondda stated that it would be possible during the coming fruit season to distribute 10,000 tons of sugar to private fruit growers for putting up their own fruit (*National Fruit Journal*, March 27).

Just as the ration card deals with King and workman alike, so this extra supply of sugar will be distributed with a democratic fairness, inspired by that spirit of sharing which has come to England out of common danger and suffering. Those who receive extra sugar for jam making must guarantee not to use it for any other purpose. They will be credited with one and three-quarters pounds of jam for every pound of sugar supplied, and will be expected to reduce their purchases of jam to that extent so as to leave for city dwellers the commercial jams and marmalades. The actual amount of sugar each anxious housekeeper receives will depend on the quantity of raspberries, strawberries and plums that grow in

her well-kept English garden. However, the local food controller will not allot more than ten pounds of sugar for each member of the family unless the jam maker will guarantee to sell her jam back to him for the benefit of the jamless public. In this case the Food Committee will pay her a price for her jam based on quality, but not above current wholesale price.

This careful looking after jam pots and preserving kettles is to make up somewhat for the shortage of butter. Butter has virtually disappeared from the English grocery store and home-produced and imported margarine has taken its place. When we remember that the weekly individual ration of butter or margarine is only four ounces, we understand the even-handed distribution of sugar for jam. In view of this shortage of butter and the demands of the army and navy, England has found it necessary to supply the manufacturers of jam with sugar to maintain their maximum output. England's 1918 jam belongs to the national pantry and not merely to the shelf of prideful housekeepers. The Food Controller means to make no slip on jam. Each pound of sugar allotted is to produce its quota of jam and surplus fruit will be carefully stored for more jam whenever sugar is available.

England has worked out a method of pulping and preserving fruit that insures its keeping for two years. Additional pulping stations have been established in the fruit-growing districts to take care of this season's surplus. Through these means and the control of transportation and the distribution of fruit to markets the Food Controller counts on getting the fullest use of this year's fruit crop for the benefit of all the people.—U. S. Food Administration.

Potatoes and Patriotism

Every potato in the land is crying to be eaten, crying to be allowed to save wheat. Satisfy your hunger with potatoes.

Scalloped Potatoes and Cheese.—Arrange a layer of sliced raw or boiled potatoes in a greased baking dish and sprinkle with grated cheese. Repeat until the dish is nearly full. Pour milk over the whole, about one-half cup to every three potatoes. Skim milk may be used. Bake in a moderate oven until done. The length of time required depends upon whether the potatoes are raw or boiled and whether the baking dish used is deep or shallow. Boiled potatoes baked in a shallow dish will take only 20 minutes. Raw potatoes in a deep dish may take as much as one and one-half hours.

A Shepherd's Pie.—Grease a baking dish; cover the bottom with mashed potatoes. Add a layer of cooked minced meat or fish, seasoned well and mixed with meat stock or gravy. Cover with a layer of mashed potatoes at least an inch deep. Bake long enough to heat through, 20 or 30 minutes.

Potato Biscuit.—(Using one and two-thirds cups instead of three cups of flour.) No liquid, 3 tablespoons fat, 1 teaspoon salt, 5 teaspoons baking

powder, 1½ cups wheat flour, 1¾ cups mashed potatoes. Sift dry ingredients, work in fat and add mashed potatoes. This makes a very stiff dough. Roll one-half inch thick and cut into biscuits. Bake 30 to 35 minutes in a moderately hot oven.

Potato Biscuit.—(Using two cups of flour instead of three.) 1 tablespoon liquid, 3 tablespoons fat, 1 teaspoon salt, 5 teaspoons baking powder, 2 cups flour, 1½ cups mashed potatoes. Sift together dry ingredients, mix in the fat and add the potatoes and liquid. This makes a very stiff dough. Roll one-half inch thick and cut into biscuits. Bake 30 to 35 minutes in a moderately hot oven.

Potato Rolls (three dozen).—3 cups mashed potatoes, 4½ cups flour, 3 teaspoons salt, 2 tablespoons corn syrup, 1 cake compressed yeast softened in ¼ cup water, ¾ cup milk (scalded), 2 tablespoons fat. Add the hot milk to the potato and when the mixture has cooled until it is lukewarm, add the softened yeast and other ingredients. Allow the dough to rise to double its bulk. Work it down and let it rise until it has increased in size by about one-half. Then shape the rolls, let them rise until they are double in size and bake them in a hot oven.

Potato Muffins.—(Saving a fourth of the flour.) ½ cup liquid, 1 tablespoon fat, 2 tablespoons syrup, 1 egg, 1 cup mashed potatoes, 1½ cups wheat flour, 1 teaspoon salt, 4 tablespoons baking powder. Add the liquid, melted fat, syrup and beaten egg to the cooked potato. Sift the dry materials together and add to the first mixture. The dough will be too stiff to mix easily with a spoon. Use a knife or a fork. Bake about 30 minutes in a moderately hot oven (205 degrees C, 400 degrees F.). Makes eight large or twelve to sixteen small muffins.

Potato Soup.—2 cups hot riced or mashed potatoes, 1 quart milk, 2 slices onion, 3 tablespoons butter, 2 tablespoons flour (rice flour or corn flour), 1½ teaspoons salt, celery salt, pepper, cayenne, 1 teaspoon chopped parsley. Melt the butter, add to it the flour and seasonings, stirring the mixture until smooth. Add gradually to this one cup of milk and boil for one minute. Add the potato, mix thoroughly, then add the rest of the milk and the slice of onion. Heat to boiling. Remove the onion, strain the soup if necessary, add the parsley and serve. Water saved from cooking celery is a good addition to potato soup. Two cups of tomato juice and one-sixteenth teaspoon of soda may be substituted for two cups of milk.

Potato Puff.—Add beaten whites of eggs to mashed potatoes (2 eggs to 6 medium-sized potatoes). Pile the mixture lightly in a baking dish and bake it in the oven until it puffs and browns. The yolks of the eggs and one-fourth cup of grated cheese also may be added.

So long as the boys are at the front, difficulties are to be subdued, impossibilities to be trampled down.

Benefits in Horticulture, Etc.

Continued from page 11

by experiments with a large list of plants. He also demonstrated that some plants refused to produce seed unless cross-pollinated. Darwin and others have more recently added much to our general knowledge of the advantages to be derived from cross-pollination.

In those horticultural crops where seeds are used for reproduction cross-pollination in the broader sense (the transfer of pollen between individuals of different varieties) is undesirable. We know that varieties of sweet corn planted side by side may become cross-fertilized and that the value of the crop for seed is thereby impaired. The same is true of many other garden crops. The seedsman who makes a business of growing pure seed of those crops where cross-pollination may take place must isolate his varieties so cross-fertilization, in the broader horticultural sense, is impossible. Among horticultural crops, cross-pollination in the narrower sense (the transfer of pollen between individuals of the same variety) is rarely, if ever, detrimental, and with many crops it is beneficial or absolutely essential. Little work has been undertaken with common garden crops, but no doubt cross-pollination in the narrower sense commonly occurs, and possibly in some cases is quite necessary. It is among those horticultural crops commonly propagated vegetatively (by cuttings, layers, suckers, graftage, etc.) that the value of cross-pollination is so apparent.

First, there are those plants which produce imperfect flowers. The strawberry is a familiar example. We all know that certain varieties of strawberries do not produce pollen, the flowers bear only pistils or organs to receive the pollen. Without pollen from another plant these flowers will not form seeds and without the stimulus of fertilization the fleshy fruit will not develop. Not only must we grow varieties with perfect flowers beside these imperfect flowered sorts but there must be means of transferring the pollen. The persimmon tree always bears the pollen-producing flowers upon one plant and the pistillate or female flower upon another. If we expect fruit we must have the two plants, although the one bearing pollen is fruitless.

We might go on mentioning other cases where such a system of flower production necessitates the transfer of pollen from plant to plant, or we might mention the less striking arrangement as in cucumbers, melons and pumpkins, where the two types of flowers are borne upon the same plant, thus necessitating a transfer of pollen from flower to flower, but not necessarily from plant to plant. In these cases it is easy to understand the importance of cross-pollination, and where the plants are not propagated by seeds it matters little whether the transfer of pollen is between individuals of the same variety or individuals of different varieties, so long as it has the desired effect, to stimulate the development of fruits. All we need is to see a plant of this

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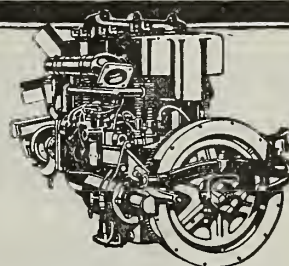
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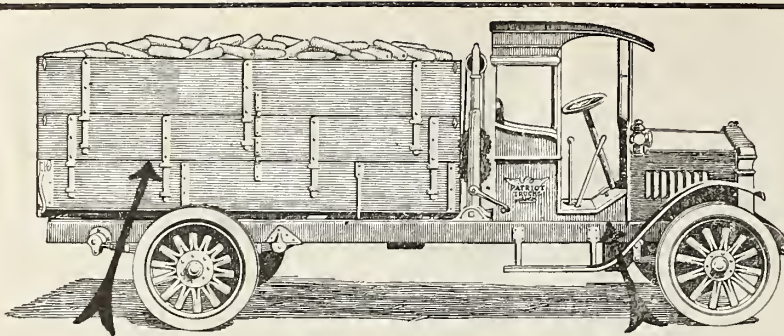
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type in bloom and we know at once that cross-pollination is needed, for the imperfections in the flower are easily seen with the naked eye.

But there is another list of plants much larger than the one just mentioned in which cross-pollination is just

as important. These are the plants that will not produce seed, and in many cases fruit, when pollinized with pollen of the same plant, or, in some cases, even with pollen from another plant of the same variety. We call these plants self-sterile. These are the plants the



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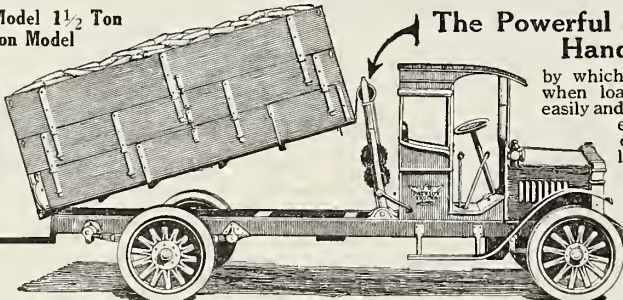
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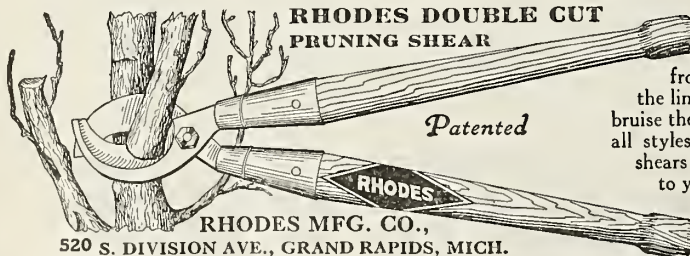
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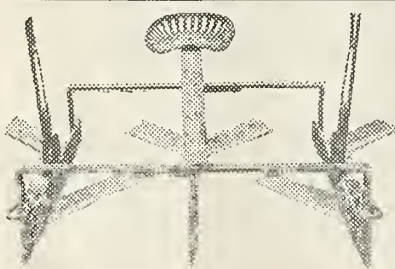
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horticulturist is interested in, for the most striking examples are found among our fruit trees. In fact self-sterility is so common among fruit trees that it is generally considered unsafe, or at least unwise, to plant single varieties in large blocks. Much experimental evidence has been accumulated upon this subject. The first work in this country was upon pears. Waite reported experiments* with something like twenty-three varieties of pears and classed fourteen of them as practically self-sterile—unable to set fruit with their own pollen. Among the common pears classed as self-sterile were Anjou, Bartlett, Clapp Favorite, Lawrence, Howell and Winter Nelis. Some of those found self-fertile were Angouleme (Duchess), Flemish Beauty, Seckel, Kieffer and LeConte. Other workers with pears have reported Kieffer as self-sterile and there is little doubt but that Bartlett and some others classed as self-sterile in the east are self-fertile under other conditions. Much work has been done upon apples. The Oregon Station, reporting upon eighty-seven varieties of apples, states that fifty-nine were found self-sterile, fifteen self-fertile and thirteen partially self-fertile. Some of those reported self-sterile were Gravenstein, Gano, Jonathan, King, Rome Beauty, Transcendant Crab, Wealthy, Winesap and York Imperial. Of those reported as self-sterile Grimes Golden, Duchess, Shiawansee (Missoula) and Newtown Pippin are the common ones. Ben Davis, Spitzenberg, Wagener, Whitney and Yellow Transparent are reported as partially self-fertile (capable of setting fruit with their own pollen, but only sparingly).

Early work with plums showed that many, if not quite all, the American plums required cross-pollination. The Japanese are also self-sterile in the majority of cases and many of the domestic varieties are apparently benefited by the transfer of pollen from one variety to another—some are self-sterile, but just how many we don't know. Peaches have seldom been reported as failing to set fruit without cross-pollination. From what we now know most peaches are self-fertile.

The Oregon Experiment Station reports experiments with the sweet cherry where the entire list of sixteen varieties worked with were self-sterile. Not only this, but it was found that some varieties were inter-sterile. Bing, Lambert and Napoleon, the varieties most commonly planted in this state, were found to be inter-sterile. In other words, these three varieties inter-planted by themselves under Oregon conditions would not be expected to produce fruit. We do not know so much about the sour cherries. They are more or less satisfactory as pollinizers for sweet cherries and are in turn probably easily fertilized with pollen from the sweet varieties, but we do not know just how important or necessary cross-pollination is.

It is not so easy to explain just why self-sterility so commonly exists among fruit trees. Just why normal pollen



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grains produced by a Wealthy apple tree and capable of fertilizing flowers on a McIntosh tree will not fertilize flowers on a Wealthy tree is not clear. We say that nature has in some way provided for cross-fertilization, the purpose of which is, we believe, to better maintain vigor in plants. We have explained why the transfer of pollen between two Wealthy apple trees does not constitute cross-pollination in the same sense as it does between two red clover plants each produced from a seed. So we see why with fruit trees it is necessary to inter-plant varieties for cross-pollination. It has been found impossible to compile lists of self-sterile and self-fertile varieties which will be found reliable under all conditions—these characters are not constant. Whether or not the variety is self-fertile or self-sterile is determined somewhat by conditions under which it is grown. Some believe that varieties are as variable in this respect as in color, size or shape of fruit. Under arid conditions where little rain falls during the blooming period the list of self-sterile varieties would probably be smaller than in a humid section. Varieties self-fertile under ideal conditions for growth may become self-sterile when planted in poor soil or in an unfavorable climate.

Aside from this necessity for cross-pollination, commonly found among fruit trees, it has been observed that, even in those varieties where it is not absolutely necessary the transfer of pollen from another variety often im-

proves the quality of the resulting fruit both in size and color. This has been reported in the case of plums, pears and apple, and although the improvement has not been phenomenal it has in many cases been considered sufficient to recommend the inter-planting even of self-fertile varieties.

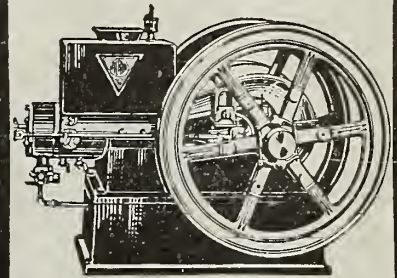
To the orchardist at least the question of cross-pollination is such an important one that we can no longer overlook the value of inter-planting varieties. Only a limited amount of work has been done to determine whether or not certain varieties are best pollinized by certain other varieties. If a variety is selected chiefly as a pollinizer, it should be a good pollen producer. This quality may vary under different conditions. Gravenstein, Grimes Golden, Winesap and Yellow Transparent have been reported as poor pollen producers, and under some conditions Black Twig is also a poor pollen producer. Under most conditions Gano, King, Wagener and York Imperial produce an abundance of pollen. In the case of sweet cherries the Oregon Station found that Black Tartarian and Waterhouse were very efficient pollinizers.

To be adapted to cross-pollination varieties must bloom at the same time. In the case of pears there is not much difference in dates of blooming. In the case of apples some very early bloomers like Gravenstein or Transcendent may be past blooming before a late bloomer like Rome Beauty is ready to receive pollen. Nearly all cherries bloom near enough together to cross-fertilize. Plums vary more, but usually those of the same class bloom near enough together to insure a set of fruit.

As to the proportion of pollinizers, weather conditions and insects will determine this. If the blooming season is usually warm and free from rain, one pollen producer in ten will usually be sufficient. In most cases it would be safest to double this proportion of pollinizers. Trees planted for pollen production need not be mixed indiscriminately through the orchard. Always plant them in rows for convenience in spraying and gathering, one row in ten, one row in five, or whatever the proportion is.

Next we must have agents for distributing pollen. It has been estimated that fully 99 per cent of cross-fertilization in the orchard is brought about by insects. Wind plays very little part in distributing the pollen of our common fruit trees. No doubt the common honey bee is the chief pollen bearer. Other bees and flies distribute pollen to a limited extent. Especially in those fruits where the transmission of blight is not a factor any orchardist would do well to keep a few bees, or, better still, encourage the bee keepers in his community. Even in the case of the apple and pear where the spread of blight may be directly attributed to bees, it is still a question whether the bees are more harmful than beneficial. Once we have eliminated those varieties responsible for harboring blight from year to year, the honey bee cannot be denied the good will of the progressive orchardist.

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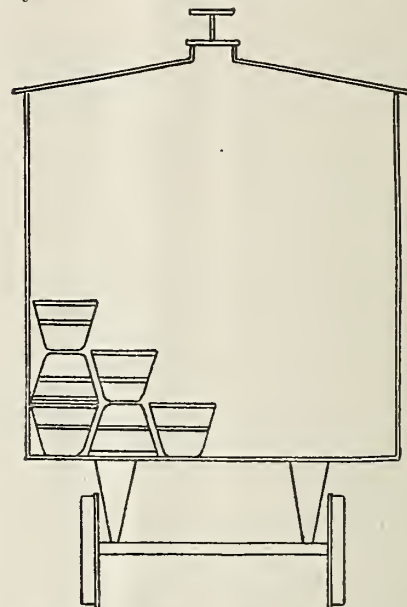
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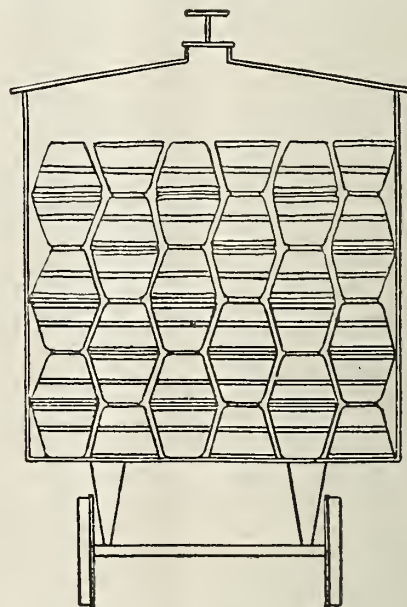
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Fruit Storage Facilities

That more apple-storage facilities will be needed this year than ever before is the opinion of local shipping experts. This is due not only to the constantly increasing acreage and yield, but owing to the fact that it is becoming increasingly difficult for the railroads to furnish cars for shipment. The unusual demands for cars, such as the army contingents and shipments to France for our army over there, are displacing the ordinary routes of traffic, and there have been no cars built recently to replace the annual wastage and depreciation. It is reasonable to assume, therefore, that the supply of cars available for use during the rush season will be entirely inadequate to take care of the demand, and the grower who is able to store his crop in his own frost-proof warehouse stands to profit handsomely for his foresight.

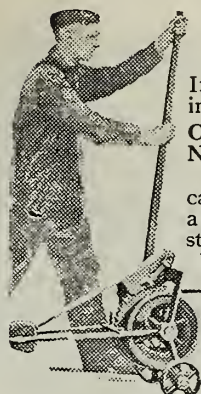
The distribution of labor effected by a good storage warehouse is no unimportant item at this time when labor is so scarce. The grower who has a well-ventilated storage house can pick and loose-store his apples from the orchard and pack them later, using the same labor, in many cases supplied by the members of his own family, thus saving in direct expenditure as well.

Hollow interlocking tile seems to be the most popular form of construction for permanent warehouses. It is made of burned clay, is fireproof and will last for generations, while the dead-air spaces within the wall act as a blanket to keep out the cold in winter and the heat in summer. Proper ventilation of an apple-storage warehouse is as essential as proper insulation. Means should be provided by which the warm air can be taken out of the room at the ceiling and fresh cold air brought into the room near the floor line. By this means and with intelligent care the temperature can be regulated and a proper amount of fresh, pure air be always available. It is possible to so ventilate a storage room that there will be no smell of the fruit when entering the room. The practice of leaving large, open attic spaces should be avoided, as

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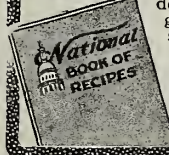
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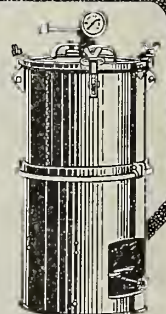


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it simply provides that much more air space which is very difficult to control. A ceiling at the height of the top of the walls should always be provided.

Regulating the humidity of the air in apple-storage warehouses is a subject which should be given much thought by those having apples in storage. There are those who believe it is nearly as important as the ventilating feature and that humidifiers should be provided in all storage rooms. Where dirt floors are used the same results can often be obtained by soaking the earth thoroughly at proper times.

The time is coming when every grower will have a small, compact, scientifically constructed, frost-proof storage house on his own farm; just the same as the manufacturer of various kinds of foodstuffs has his own storage facilities at the factory and ships from storage rather than from the factory, according to the demands of the market and his own convenience.

Uncle Sam is today the quartermaster of a hungry world. He is playing the game squarely and counts on every American to do the same.



**PERFECTION IN
FRUIT LABELS**

THE SIMPSON & DOELLER CO

1423-24
NORTHWESTERN BANK BLDG.
PORTLAND, OREGON.
E. SHELLEY MORGAN
NORTHWESTERN
MANAGER

WE CARRY IN PORTLAND,
STOCK LABELS FOR
APPLES, PEARS,
STRAWBERRIES
& CHERRIES

SEND FOR SAMPLES AND PRICES

A Message for Fruit and Vegetable Growers

We desire to get in touch with Fruit and Vegetable Growers in all parts of the country in order to establish Fruit and Vegetable Drying Plants for single firms that want to build new and up-to-date drying plants for themselves and with two or more Growers that would favor the construction of a drying plant on a co-operative basis.

There are many millions of dollars worth of Fruit and Vegetables left to rot on the ground and many more millions of dollars are paid in freight rates, tin cans and boxes that can and must be saved. We will invest some of our own capital, if you wish, as we are sure that it is to our mutual benefit, if you write us today for particulars. All information on this subject will be given cheerfully and free of charge. If you are in business for making the best profits write now.

The A. A. A. Evaporator Manufacturing Co., Inc.

2371-73 Market Street, San Francisco, California

F. W. BALTES AND COMPANY

Printers · Binders



Unexcelled facilities for the production of Catalogues, Booklets, Stationery, Posters and Advertising Matter. Write us for prices and specifications. Out-of-town orders executed promptly and accurately. We print **BETTER FRUIT**.

**CORNER FIRST AND OAK STREETS
PORTLAND, OREGON**

American Tractors Go to France

To increase France's crops and to lighten the burden of toil on her old men, women and children, the United States Food Administration will ship 1,500 farm tractors to that country. The first hundred are already on the way, and the whole number will be in France by March, in time for the spring plowing. They are expected not only to be of immense service to France, but to release added tonnage for the Allies and American troops by increasing the amount of food produced there, thus decreasing the amount of food that must be shipped from America.

The idea originated with former American Ambassador to Turkey Henry Morgenthau and his son, Henry Morgenthau, Jr. The Food Administration approved the idea. Deck space was provided for the first shipment of tractors aboard a naval transport through the efforts of Assistant Secretary of the Navy Franklin Roosevelt and Paymaster-General McGowan. The Food Administrator designated Henry Morgenthau, Jr., to follow the machines to France and put them in operation. He will organize schools of instruction for French operators and will assist the French Minister of Agriculture in distributing the tractors and operating them economically.

French High Commissioner M. Tardieu approved the idea on behalf of the French government and a committee of the National Implement & Vehicle Association assured Mr. Morgenthau that the tractors can be furnished, and that with the shipments made now the manufacturers will not be embarrassed in taking care of the American farmer, since they will have time to manufacture an additional number to meet the home demand when it comes. The need for these tractors is shown by this comparison of the present and pre-war acreage of crops in France:

The acreage sown to crops in the uninvaded portion of France in 1917 was 30,742,157 acres, compared with 40,657,293 acres in 1913. This is a decrease of 9,915,136 acres, or 24.4 per cent.

The total crop production in France this year is officially given as 22,200,000 metric tons (24,581,290 short tons), compared with 35,800,000 metric tons (39,462,340 short tons) in 1913, a decrease of 13,600,000 metric tons (14,881,050 short tons), or 61.3 per cent, or a decrease of 38.7 per cent.

The following figures give an idea of why it is good tactics to send tractors to France now, and tractors can plow 500,000 acres this spring and another million acres for planting fall wheat. Half a million acres in potatoes would produce 1,500,000 tons of potatoes. One million acres in fall wheat would produce 450,000 tons of wheat. This increased production in France would greatly relieve the food situation in that country, leaving, moreover, 1,950,000 tons of shipping in 1918 available for other purposes.—U. S. Food Administration.

Northwestern Boxed Apples, Etc

Continued from page 6.

for "co-operation" and "co-ordination." These two points, coupled with intelligent efforts and right motives, are vital to the success of any large undertaking.

Nothing but praise should be bestowed upon the advertising and educational work being done by the Northwestern Fruit Exchange, the Hood River Apple Growers' Association and the Yakima Valley Fruit Growers' Association. Much good has come from this work. It is constructive. They have been the pioneers and deserve unstinted praise, but comparisons oftentimes bring out a point, and the advertising efforts of the Northwestern fruit growers up to date can well be compared with our trying to whip the German army armed with pea-shooters. We have got to get out of the pea-shooter class and we have got to arm ourselves with the greatest weapon known to the modern business world; that is, education, commonly known as advertising.

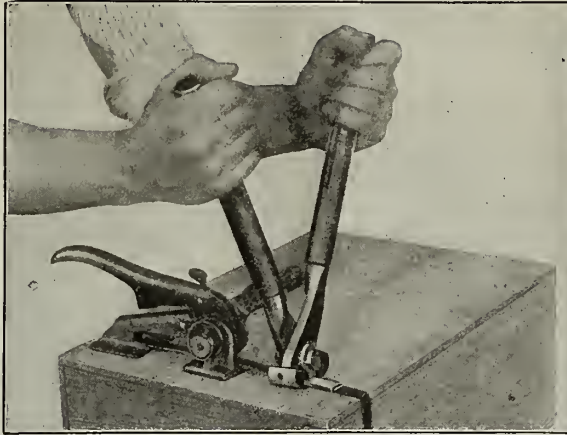
Just stop and think for a moment what the fruit by-products people are doing in the Northwest. They are making more money out of the discarded fruit than we are unable to sell to the trade than the grower is out of his first-class products, and why? Simply because they are using the methods we have not—advertising, educating the people to know the value of their product. Why should we stand still and allow our more progressive brother to outstrip us? We must awaken and see conditions as they exist and not as we wish them to be. Simply because Adam was supposed to be the first apple dealer is no reason why we should follow along methods that he advocated, and this is more especially true at this time than at any time during the history of our business.

When this war is settled, as it must be some day, we are going to find ourselves surrounded by new conditions; conditions which we did not make, but conditions that we must adapt ourselves to if we would take our proper place in the business world. Let us not deceive ourselves any longer. One of our greatest mistakes is in being content with an unsuccessful business and dallying along from year to year. The Northwestern apple business is conducted in most part as if this was our last season. We lack stability of purpose. We fail to grasp the wonderful possibilities lying at our door. We are hoping that "something will turn up" to help us out, but that is a mistaken notion. Things don't just happen. Permanent success will come only through patient endeavor, untiring and intelligent efforts, coupled with a steadfast purpose. We must adopt a definite, well-defined, broad-gauge plan and then carry it through. Let us not hang onto a non-productive business, but let us get behind it and make of it what we are entitled to.

Our points of perfection appear in about the following order, allowing 100 per cent as standard: Growing, packing and warehousing, 65 per cent; transportation, 75 per cent; distribu-



Steel Box Strapping



Used in connection with metal seals consists of encircling a package with a metal strap, drawing the strap very tight and interlocking the overlapping strap-ends within a metal sleeve (**SIGNODE**) in such a manner that the joint has a greater tensile strength than the strap itself. Nails, rivets and buckles, with their attendant objections, are entirely eliminated.

Write for Catalog

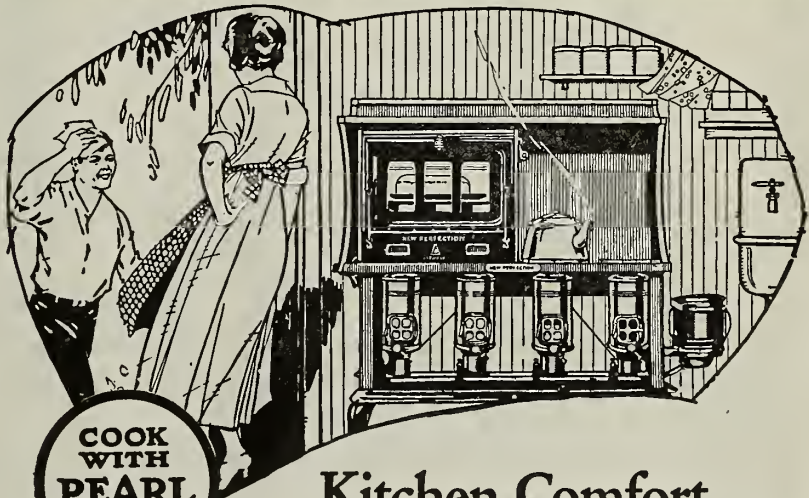
Acme Strapping packed in bbls. of about 500 lbs. or larger pkgs.
Metal Seals packed in cartons containing 2,000-2,500 seals.

ACME STEEL GOODS CO. MFRS.

Factory: 2840 Archer Ave., Chicago

311 California St., San Francisco

Stock carried in Seattle and San Francisco



**COOK
WITH
PEARL
OIL**

Kitchen Comfort

No matter how hot it is outside, your kitchen is always cool and comfortable when you use a New Perfection Oil Cook Stove.

Steady heat concentrated on the cooking. No smoke or odor; no dust or dirt. Lights at the touch of a match and heats in a jiffy. Bakes, broils, roasts, toasts—all the year round. Economical. All the convenience of gas.

In 1, 2, 3 and 4 burner sizes, with or without ovens or cabinets.
Ask your dealer today.

STANDARD OIL COMPANY
(California)

NEW PERFECTION OIL COOK STOVE

A New Perfection Oil Cook Stove means kitchen comfort and convenience. Ask your friend who has one. Used in 3,000,000 homes. Inexpensive, easy to operate. See them at your dealer's today.

"The store where I do my trading"

THROUGHOUT the West—go where you may—big town, small town, cross-roads store—there you will find Ghirardelli's.

This West-wide distribution has been made necessary *by demand*—a demand for a delicious, sustaining food-beverage; a demand that is met by Ghirardelli's, and by this alone.

Result? Today Ghirardelli's Ground Chocolate is in daily use in more homes in the West than all other brands combined.

As a beverage it is beneficial; as an aid in baking and cooking it is invaluable.

Be sure to ask for it—at "the store where you do your trading."

*In ½ lb., 1 lb. and 3 lb. cans; a
tablespoonful—one cent's worth—
makes a cup.*

D. GHIRARDELLI CO.

Since 1852

San Francisco

Ghirardelli's Ground Chocolate



tion, 50 per cent; selling, 60 per cent; advertising, 2 per cent, which shows an unbalanced, top-heavy structure.

We should avoid starting the season with prices so excessively high that they must decline and show the dealer a loss. We should practice free selling early in the season, always remembering that the purchaser who buys and makes a fair profit comes back for more. Allowing that we have 15,000 cars of late-keeping varieties, we are doing the industry an injury in selling the first thousand cars at high prices and the balance on a declining market. We should reverse the situation, carefully feel our way step by step and start where we can advance the market and work on an advancing market.

We should begin right now to launch a well-balanced advertising or educational campaign. No single organiza-

tion or district can do this by itself. It must be done collectively, and it can be done because, as I have said earlier, the problem is before us and we must solve it. None but a coward would shrink from it. A sum sufficient to properly carry through an advertising campaign to a successful result can be collected, wisely and honestly used. In taking this great forward step this coming season, a board of governing trustees should be formed to be composed of one trustee from each participating district, each man to be of the character and quality that will inspire perfect confidence, and this board to select a qualified man to handle the campaign from the best located Eastern point. This is not to be done for one season, but for every season, increasing the appropriation each year.

You have probably been asking yourself a number of times in reading this article what salt mackerel has to do with apples. In one sense it may have nothing; in another sense a great deal. We have all known about salt mackerel ever since we can remember about anything and on the face of it it would seem sheerest folly to an intelligent American business man to advertise it, but it is being done on a very large scale in the East. No name is signed to the advertisement. It simply opens the way for people to purchase and use more of this food.

I recently made inquiry at one of the large wholesale fish houses as to who was paying for this advertising campaign. The reply was, the wholesale dealer and producer of salt mackerel. I further inquired if satisfactory results were being obtained and the answer came back, they certainly were. Now, salt mackerel is not an article governed by weather or other conditions that surround the production of apples, but the mackerel people saw that if they could educate the people to use more salt mackerel they could keep larger fishing fleets employed, keep their packing houses running to capacity and their selling force as well.

If advertising (educating) will put the salt mackerel business on a paying basis, there is yet hope for the Northwestern apple grower if action is taken instead of living in hope.

Mark Twain Would Have Bought Them

Were the lovable Mark Twain alive today, he would doubtless be in the first-line trenches of the home re-trenchers, for Mark was thrifty and the government's Thrift Stamps and War Savings Stamps offer would have appealed to him mightily. Mark Twain had many financial reverses in his lifetime, largely because of bad investments, but his thrift and happy disposition pulled him out of the box every time, and he squared up with the world and accumulated a "stake" before he passed on "over there" to make heaven the happier for his coming.

Talking one day to his friend, William Dean Howells on the vicissitudes of the humorist's earlier days, Mark Twain said: "My difficulties taught me some thrift, but I never knew whether it was wiser to spend my last nickel for a cigar to smoke or for an apple to devour." "I am astounded," replied Mr. Howells, "that a person of so little decision should meet with so much worldly success." Mark nodded wisely. "Indecision about spending money," he said, "is worthy of cultivation. When I couldn't decide what to buy with my last nickel I kept it, and so became rich." So Mark Twain, because of his love of country and his thrifty nature, would have been a generous purchaser of Uncle Sam's Thrift Stamps.

Thrift and War Savings Stamps and Liberty Bonds are the answer. Are you answering?

To make you grange meetings and farmers' institutes thoroughly patriotic, heat the hall with wood instead of coal.



Linking Farm and Market

Transportation is an increasingly vital factor in the farming industry.

As farm crops become more diversified, the markets must be studied more carefully and reached more quickly.

Profitable farming has found a wonderful aid in motor transportation.

Power-driven vehicles on rubber tires have greatly widened the possible market that can be reached from any given point.

They have made timely marketing possible, enabling the grower to take advantage of price changes.

They have cut to a minimum the time used. What was formerly an all-day trip now requires but a couple of hours and leaves the horses at their work on the farm.

Using motor vehicles for business reasons, it is important that you treat their equipment in business fashion.

Buy tires on the principle that long and continuous service is the first requirement.

In this year of war, your time and efforts are more important than ever before. You need your car more. Your tires must be dependable.

Equip with United States Tires.

Use them for the same reason they are chosen by big commercial companies having large fleets of cars—because they give greater mileage per dollar of cost and permit maximum service from the car.

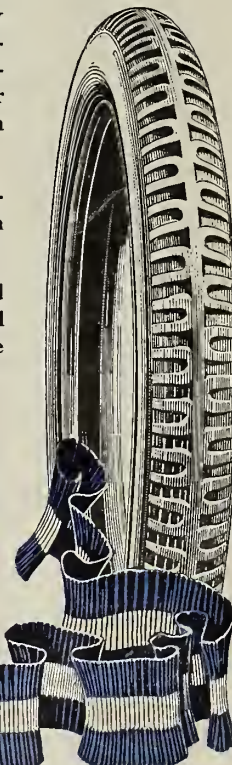
There is a United States Tire scientifically built to meet every condition of service.

One of the thousands of United States Sales and Service Depots will cheerfully aid you in selecting the right type and tread.

'Chain'



'Usco'



United States Tires are Good Tires

For commercial cars the Solid Truck Tire and the 'Nobby Cord.' Also Tires for Motorcycles, Bicycles and Airplanes.

United States Tubes and Tire Accessories Have All the Sterling Worth and Wear that Make United States Tires Supreme.

The World  *Our Orchard*

PRIVATE SALE vs. AUCTION

Experience has demonstrated clearly the manifold advantages of sale by private treaty, which method is now acknowledged on all sides to show more satisfactory results than the auction.

Assuming that you are anxious to dispose of your fruit in the best possible manner and to the best possible advantage we, as **PRIVATE SALESMEN**, have no hesitency in laying our claim before you.

Whether you prefer to sell your fruit on an outright f.o.b. basis or prefer to have it handled for your own account on a consignment basis, both of which methods are entirely agreeable to us, the fact remains that the firm of

Steinhardt & Kelly

**101 PARK PLACE
NEW YORK**

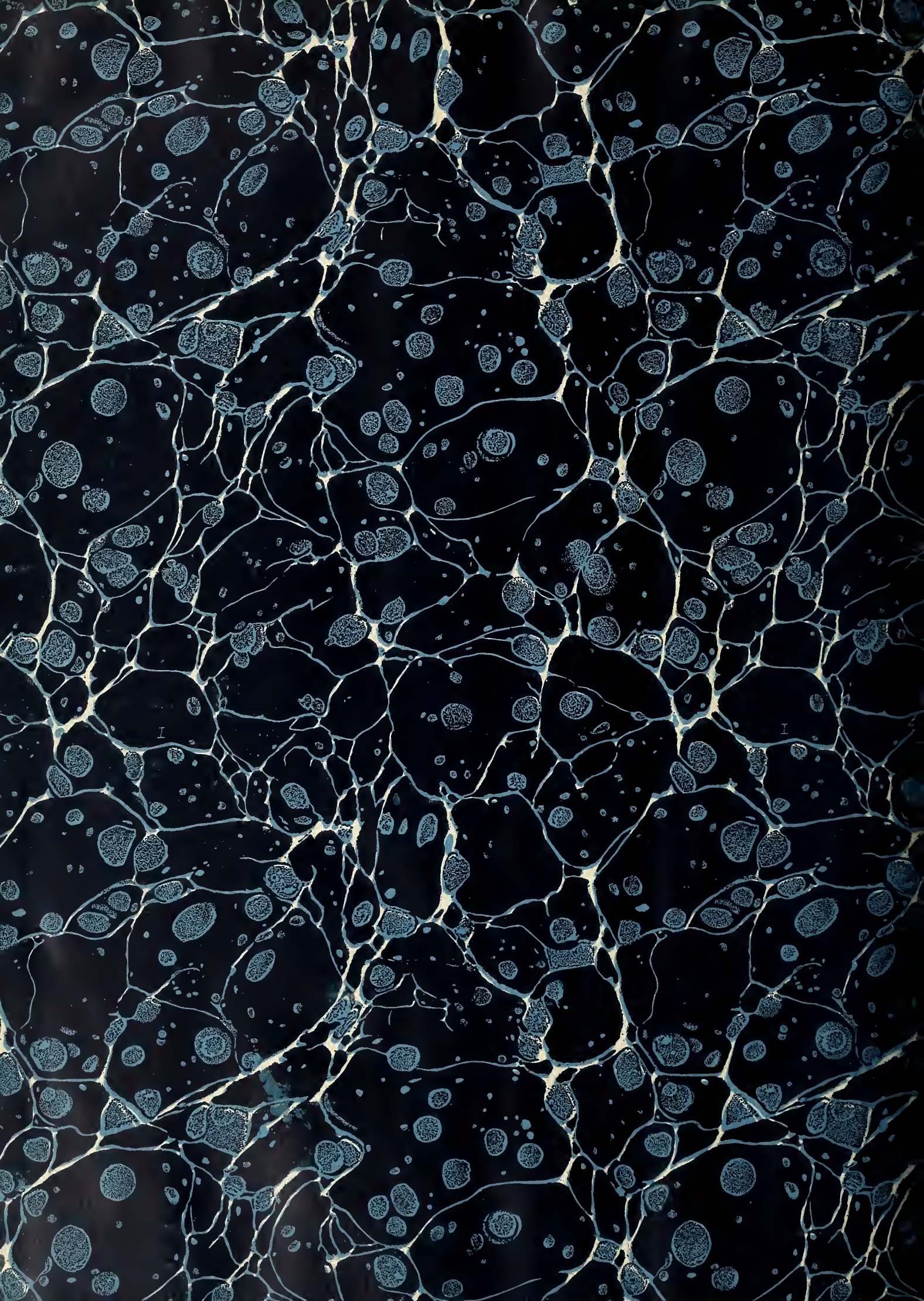
is in position to give you the best possible service. Our reputation of
“Never Having Turned Down A Car”

although practically 90% of our business is done on an outright purchase basis, is a record of which we feel deservedly proud.

Our Market

The World





30	
B46	
v.12	Pett
Ret Apr 2 '19	
JUL 1 1919	
APR 2 1924	DE
OCT 29 1927	AC
OCT 17 1929	AGN
JUN 28 1935	AI
SEP 2 1939	AGN



